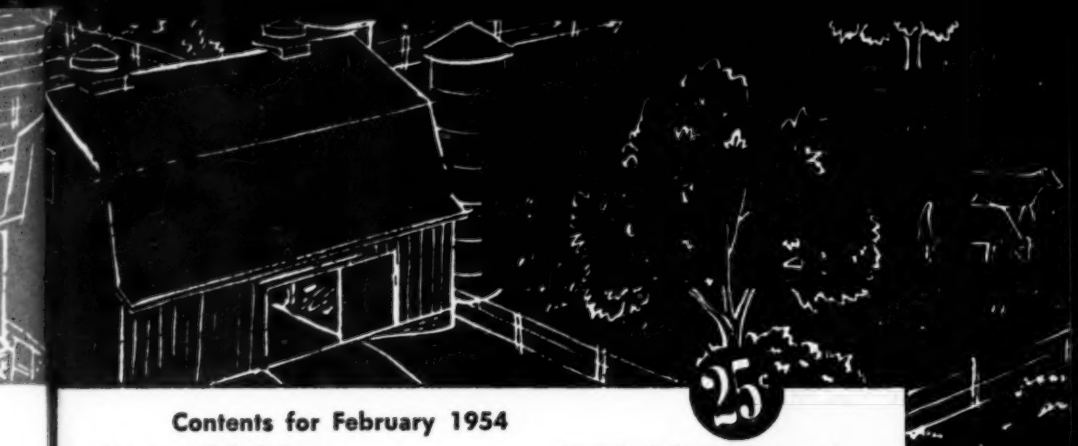

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The Farmer's Digest

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IN THIS FEBRUARY ISSUE are several valuable articles forecasting price and profit trends in 1954. Based on recent reports by economists, they give you a valuable insight into prospects for the next crop year. We believe it will pay you to read them carefully, and keep in mind that "a little work with a pencil may pay you a great deal more than a lot of work with a spade".

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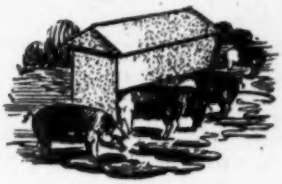
What Next in Beef Cattle Research?
Six Ways to Judge Efficient Farming

The Farmers Digest

Volume 17 February 1954 Number 8

REPORT ON HYBRID HOGS



A farm manager tells of his success with new hogs that top the market and make more money. . . .

Condensed from Journal of the American Society of Farm Managers and Rural Appraisers.

E. G. Fruin

HYBRID hogs have a place on livestock lease farms; you will save more pigs. As proof, we purchased eleven hybrid gilts from Jim Wallace in 1947; now all of our livestock tenants use them. The most ardent booster is Forrest Woods who started with them first in 1947. In every case we have placed them on farms in direct competition with the purebred or crossbred strain used there or in the neighborhood and their performance has caused our tenants to keep them and to drop the original strain.

Occasionally I get a tenant to buy a new strain of regular hogs which has been doing well for some neighbor, and we again test to see that the hybrids stay ahead. This last year we have been consistently topping the market with what the buyers call a fine lot of meat-type hogs.

Since 1945 everyone has been impressed with the new developments in agriculture and the glamourizing stories of their

Reprinted by permission from the author and Journal of the American Society of Farm Managers and Rural Appraisers, Lexington, Kentucky.

adoption. Yet I am often depressed by not hearing how these practices work out over a period of years. You may recall the story in Country Gentleman about November, 1947 by Jim Wallace on what inbred cross hogs were doing. You may also remember that Sam Guard challenged Jim on his statements. Our foundation for this very satisfying hybrid hog experience was from these hogs that Jim wrote about in Country Gentleman.

Understand, this won't be just a general opinion article. I have helped tenants mark and weigh their hogs at 56 days. I have hunted out the boars they use in rotation. In fact I have practically adopted a hobby working along the lines of using hybrids in hog production toward producing a profitable hog that carries less lard.

A general summary of data shows that under farm conditions, our tenants have saved from one to two pigs more per litter when compared with the selected regular strains of hogs they would be using. At 56 days, these pigs weighed from 10 to 25 per cent more. In the fall of 1949 we weighed about 400 hogs individually at 175 days. About 2/3 of these were hybrids and averaged 7 per cent heavier for their age.

I Advise Caution

Let's not get too enthusiastic and assume that this is a panacea that will cure all of our hog production difficulties. When we remember that 85 per cent of the efficiency with hogs is accomplished with good feeding and management, we can see that any carelessness in hog production would throw hybrids almost as quickly as other strains. I attribute the better results at weaning time to the fact that pigs are stronger at birth and any strong large pig will do better than the small ones. We have not noted any instances where hybrid hogs were more susceptible to troubles than regular strains.

They define a meat type carcass as being a carcass that will have 50% or more of the chilled carcass in primal cuts at a live weight of from 190 to 200 pounds. They also want a backfat thickness on the carcass of not over 1.6 inches at the same live weight."

Follow Proven Practices

Finally, I am sure we seldom have good results with any hogs without (1) very close attention to gilt selection, (2) flushing at breeding time, (3) having the boar well "acclimated" to the farm, (4) plenty of exercise during the gestation period, (5) a nice warm place to farrow (individual house banked around the edge in February does all right), (6) creep feeding of little pigs, (7) mixed ladino pasture, and the (8) friendly care

of the livestock farmer who enjoys the extra profits obtained. These are all essential in hog production. Many tenants are not impressed with the importance of this nurse-maiding and will chuck a hybrid breeding program unless you let them "find" the new stock themselves. If I had such a case, I'd let the tenant hear of a couple of bred gilts just ready to farrow which were hybrids themselves and properly mated and then suggest that he might keep a few gilts from their off-spring to see just how an outside strain might compare with his own. He'd then be coming to you with the enthusiasm to continue that type of breeding.

Americans Consume More Milk, Less Butterfat

The United States is in the midst of a revolution in its use of milk and milk products, according to W. H. Dankers, Minnesota extension economist.

Shifts in the way Americans are making use of their milk supply is one of the reasons for our present surplus of dairy products. Other reasons are the competition from substitutes and the loss of foreign outlets for dried milk.

Americans are consuming less butter, Dr. Dankers explains, but more milk and other manufactured dairy products. During 1935-39 we were using on the average about 17 pounds of butter per person a year; since then per capita consumption has dropped to a little below nine pounds a year. On the other hand, consumption of whole milk, dried whole milk, canned milks, cheese and ice cream has increased, and the use of non-fat dry milk, various skimmed milk drinks, cottage cheese and other products containing non-fat milk solids is steadily expanding.

Altogether there has been a decrease of four pounds per capita in butterfat consumption but there has been a seven-pounds increase in the consumption of non-fat solids since the period of 1935-39, Dr. Dankers says.

The economist looks for further increases in the domestic use of milk products other than butter. Dried skim milk is at present in surplus supply because of the loss of foreign outlets, but the use of this product domestically has increased rapidly, and further increases can be expected.

Meanwhile, milk production this year is expected to reach record levels and may be near 118 billion pounds. In 1952 it was 114 billion pounds. *University Farm News*

Thicker Stands Grow More Corn

An extra dollar's worth of seed might make you $50.00. . . .

Condensed from Farm Journal.

E. R. Duncan, Iowa State College

THOSE big, hefty ears of corn look good, but they don't add up to highest yields or top returns on your fertilizer dollar.

Actually you'll put more in the crib if you crowd your corn a little in the field—plant thick enough to keep ear size down to about half a pound. Both plants and plant food work harder that way—make more pounds of corn per acre. And that's what really counts, since we sell and feed corn by the pound.

Here are the planting rates that should come the closest to making 100 bushels or better when you put fertilizer on good 60-bushel corn ground:

- On light soils that are sometimes droughty—at least 12,000 plants per acre.
- On well-drained, medium-textured soils, seldom droughty —14,000 plants.
- On heavy soils that drain slowly—no less than 16,000 plants.
- If you want to win your county corn yield contest, you'll need at least 20,000 plants and plenty of moisture.

It takes more seed corn to plant thick, but an extra $1 worth of seed could make you more than $50. It did just that for Wesley Frank, Waseca County, Minn.

Experimenting with the help of soil scientists, Frank put on 200 pounds of ammonium nitrate and 1,000 pounds of 10-10-10 per acre. Where he planted only 8,000 stalks per acre, he harvested only 14 bushels more corn with the fertilizer than he did without it. That extra corn

Reprinted by permission from the Farm Journal, Philadelphia, Pennsylvania

was worth about $22—not enough to pay for the plant food.

But he got a whopping 47-bushel boost—worth more than $75—when he put the same fertilizer on corn that averaged 16,000 plants to the acre. (Actually, the scientists overdid on the plant food in Frank's case; now know that half as much fertilizer — and 1,000 plants — would have made just as much corn.)

Here's more evidence: Researchers helped Clarence Williams, Fillmore County, Minn., jump yields from 48 bushels per acre to 58 bushels just by doubling the stand from 8,000 plants to 16,000 plants, without any fertilizer. With fertilizer, they zoomed yields up to 92 bushels for the thicker stand, but they got only 3 bushels with fertilizer on the thinner stand.

What about poorer soils? Fertilizer and extra stalks go well together on poor soils, too, provided there's enough moisture.

Thicker planting worked all right with fertilizer on a recently purchased run-down field, for Jens Anderson, O'Brien County, Iowa. Without fertilizer the thicker plant stand gave him a 6-bushel decrease—39 bushels from 8,000 plants; only 33 bushels from 16,000.

But he got 125 bushels from 16,000 plants when he plowed down 833 pounds of 12-12-12 and side-dressed with 200 pounds of 33-0-0. With 8,000 plants, fertilized the same, he got only 92 bushels.

You have to team plants and plant foods together to get the most out of both. No use spending money for extra fertilizer when your stand is too thin. And you run into trouble if you plant a stand that demands more plant food than you supply.

You can decide your fertilizer needs from soil tests. To figure out the stand you need, remember that there are 13,068 running feet of standard 40-inch rows in an acre. That's 3,960 hills, if you hill-drop 40 inches apart. Four growing plants to the hill would give you a stand of 15,840.

Chances are that you'll do better if you put the hills and rows closer together, and plant fewer kernels per hill.

In the 23 years that the Illinois 10-acre yield contest has been going, the highest stand that has ever won was 22,000; the lowest winning stand was 11,000 plants in two mighty dry years—1934 and 1936. Every year since 1937, the winning stand has been more than 16,000 plants per acre.

This year, you probably won't want to go much above 16,000 plants per acre, unless you're really after top yields—big enough to win a corn-growing

contest. Illinois Agronomist J. W. Pendleton has a rule of thumb for corn growers:

If you're not changing fertilizers, divide your past average yield in bushels by 25. The nearest whole number will tell you how many plants to grow per hill, if you're checking the corn in 40-inch rows.

What are the disadvantages of these thicker stands? One is the bigger risk of crop failure if you get a dry year. But it would have to be dryer than you can afford to plan for.

Another disadvantage that growers report is more down corn, plus the tougher picking that goes with heavier growth and higher yields. You may also get some change in grade—fewer kernels that are large or medium flats. But that won't affect you much unless you grow seed corn.

Here's something else: Thicker stands delay maturity. That's important if you live in the northern part of the Corn Belt.

Last fall, Iowa soil scientists found that without fertilizer, 20,000 stalks per acre matured nine days later than 8,000-plant stands of the same varieties. Where they used fertilizer, the thicker stands were only four days behind.

In tests without fertilizer in northwest Iowa, all of the stands above 8,000 plants were hurt by the first frost. With fertilizer, the thicker stands matured.

To allow for this delayed maturity, you can (1) plant an earlier variety; and (2) use a balanced fertilizer. Even a small amount of starter fertilizer will usually hustle the corn along and speed up maturity by two to seven days.

Regardless of these few disadvantages, it looks as if those thicker stands and smaller ears make fertilizers pay better with the varieties of corn we now grow.

Ears less than half a pound—even as small as five or six ounces—may make you the most money in the northern part of the Corn Belt. Half pound ears are a good bet in the southern part of the Corn Belt.

Plant breeders are working with hybrids that do better in thicker stands. Illinois agronomists say Hy^2 X Ohio 7 is one good example. They plan to develop new lines that will do even better in stands above 16,000 plants per acre.

Farmers who think they are going into the hole financially should take an inventory of their farm business to see just where they stand. An inventory is a good remedy for a touch of the blues, says John Doneth, farm management specialist at Michigan State College.

Beef Outlook

Cattlemen at their annual convention feel more optimistic. . . .

Condensed from The Wall Street Journal.

James N. Wallace

ANOTHER year-long beef eating jag for American families. . . Some real bargains for the housewife in lower quality steaks and roasts. . . But a slight letdown after the record upsurge in cattle numbers on U.S. farms and ranches.

These are highlights of the 1954 beef outlook from the foot of Pike's Peak, where leading cattlemen talked shop. The shop talk was mixed with sessions of the 57th annual convention of the American National Cattlemen's Association, an old-time group representing some 100,000 cowmen in the West and South.

These cattlemen—in traditional 10-gallon hats and cowboy boots—are rangemen. They run the front end of the nation's beef factory, growing calves that eventually wind up as beef in retail butcher shops. The things they do—or are forced to do by weather or economics—determine the beef picture for years ahead.

Record 1954 Consumption

Last year Americans chewed up 75 pounds of beef per person, a record high and up from only 55 pounds as recently as 1951. Consumption is expected to drop a pound or two per person this year, but 1954 still will be one of the beef-eatingest years on record, the association predicts. In the 1930's, annual consumption averaged only 53 pounds per person.

This bright beef outlook for the eating public contrasts with a dim prospect in pork. Pork consumption this year is forecast at only about 58 pounds per capita, some 14 pounds below the height reached in 1952 and lowest since 1938. But there is likelihood of change in the pork picture; production next fall is expected to outrun that of autumn, 1953.

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Cattlemen here insist continued full-scale dinner-table attacks on beef cuts are the only thing that will bring stability back to the cattle business. The prices for the critters they sell were cut in half when dry weather forced liquidation of hundreds of thousands of cattle. "We never had too many cattle for the people," says an Arizona rancher, "but we sure had too many for the grass." And while prices of his products plunged, the cattleman's operating cost remained high, making a two-way squeeze.

Even if the weather improves, and prices move up a little, cattle market experts don't see any way out of the pinch unless marketing — and eating — continues at a speedy clip.

Higher Calf Birth Rate

"Next spring we'll have about 40.5 million calves born, a half million more than last spring —so heavy consumption looks like the only way to keep the cattle population in hand," says an official of a major packing company.

The expected calf crop would be of record proportions, and that's one reason why some retail beef prices may look more attractive to consumers in coming months. With corn prices held high by supports, and no supports on beef, the feeding of calves on corn to make high-grade beef can be a short cut to bankruptcy—as it was for many feeders in the past year. Many feeders have curtailed operations.

Fewer Cattle on Fattening Diets

Helping to shift emphasis to cheaper grades of beef is the slump in numbers of cattle being stuffed with corn and other feed in feed lots. Today some 5.3 million cattle are in feed lots, against more than 5.8 million a year ago, according to the cattlemen's group. With consumer income tilting slightly downward, cattlemen think the increase in supplies of less costly beef has come at a good time.

The cattle boom, which peaked in 1952, was featured by general price rises, increasing numbers of cattle, an abundance of feed and an influx of inexperienced newcomers to the cattle industry, says N. K. Carnes, general manager of the South St. Paul, Minn., Central Livestock Association. The bust, which hit its lowest ebb in mid-1953, was touched off by drought that cut short feed supplies just when a record number of cattle got hungry.

"It looks like we've arrested the increase in numbers, maybe even cut a little from the start of 1953," says Jay Taylor, Amarillo, Tex., rancher just elected president of the association. "I think we've turned the corner and can work off the

excess cattle. And one of the best things for the cattle business is that we turned the corner by putting beef into stomachs, not into storage. Right now, there's only one pound of beef per person in storage. If everybody sat down and ate a pound of beef tomorrow night, there just wouldn't be any storage." Storage stocks of beef at the start of December were about 22% below the 1953 high, reached at the start of February.

A year ago, there were 93.7 million head of cattle—including 56.8 million beef animals—on the nation's ranches and farms. Righ now, there are about 93 million, estimates F. E. Mollin, executive secretary of the cattlemen's association. A cattle population of about 92 million head is forecast for next January.

A Gain was Expected

Just a year ago, cattlemen were predicting today's cattle population would be nearly 100 million head. "It might have been, too," says Mr. Mollin, "if we hadn't slaughtered a record 36 million head in 1953." The year before, only 28 million cattle went on the block.

But with a record calf crop on the way, this year's cattle slaughter probably will exceed 1953's record in numbers, Mr. Mollin relates. Even so, beef production will likely fall slightly under the 1953 record of 12.3 billion pounds because lighter-weight animals will be coming to market. In the past month, steers coming into major markets weighed 35 to 40 pounds less than a year ago. The recent weights have averaged below 1,100 pounds.

The falling-off of cattle numbers started in 1953 probably will continue until 1959, at the rate of about a million head a year, predicts Dr. Herrell Dagraff, Cornell University. That would mean a low spot in 1959 of about 87 million animals, roughly the same as the beginning of 1952. "I believe we can liquidate from the present high point in the cycle with little or no further decline in cattle prices," he adds.

Most cattlemen feel they've been through the tightest part of the current price wringer. But they're divided on whether today's prices paid to them are high enough for the cattlemen to make a living.

"Would-Be" Cattlemen Eliminated

"Any man who can't make out at 20 to 25 cents a pound for heavy calves should be out of the business," states H. F. Techmeyer, Scranton, Ark., cattleman. That price range is a bit above the current range in the big Kansas City market. He adds: "I don't think prices will go down any more, but the drop eliminated all the would-be cattlemen."

A different view comes from D. C. Schaffer, O'Neill, Neb., rancher with about 5,000 head of cattle. "A man can hardly get by on present prices," he says. "What with operating expenses and taxes the way they are, you couldn't carry any debt with today's prices."

Mr. Schaffer, a tall, rangy man who wears a string tie reminiscent of the Old West, mirrors general feeling when he says he was "pretty blue about the cattle business six months ago, but I feel much better now, even though I don't look for any return of big prices. Six months ago, we had the drought, everybody hollering about too many cattle, and panicky feelings all around. It looks better now."

More Liquidation?

Another dry year would mean more forced liquidation of herds in the parched Southwest, ranchers from that important cattle raising area warn. Says Henry Boice, from Tucson:

"Moisture's the key to the whole year for me. We've been running understocked for several years, but we hope we'll get through with what we've got. If the range doesn't improve, though, there'll be more liquidation in '54."

Mr. Taylor, whose cattle carry a "Rafter O" and "Double H" brand, says the drought has forced him to cut down his herds by 50%. "The oldest cow on my place is three years old," he says. "All the older stuff is gone. That shows you what the weather can do." Like other Southwesterners, Mr. Taylor will build up his herd somewhat if the weather cooperates in coming months.

Stubborness:—A load of very fat, rought, heavy cattle was recently sold on one of the public markets. These steers weighed over 1,600 pounds each. They had undoubtedly been in a dry lot over a year and chances are each one had consumed at least 125 bushels of $1.60 per bushel corn, or $200 worth of the golden grain. These monstrosities sold at 23c per pound and undoubtedly had cost more per pound when purchased than they brought when finished. Such big, rough animals should be fed not more than four months and then replaced with lighter ones which would make much more efficient use of the feed. The housewife today does not want heavy, wasty, fat cuts of beef such as these animals undoubtedly produced.

Northwestern "Ag" Letter

Farm Boys Should Go To College If They Want To

Condensed from Science For The Farmer.

Russell B. Dickerson

A recent survey revealed that it is worth $40 per day for a boy to attend high school. Upon graduation he may be expected to earn during his lifetime, $33,000 more than the grammar school graduate.

Similarly, the expected lifetime earnings of the college graduate are $72,000 more than those of the high school graduate. This may be interpreted as the cash value of a college education. If a farm boy will invest $4,000 in a college education, he may reasonably expect a cash return of 18 times his investment.

It isn't so much a question of whether a farm boy should go to college as it is whether he wants to go to college. The decision should be made by the boy himself. Quite naturally he should seek the counsel of his teachers, his parents, members of college faculties, and others. The time he may spend in college, its cost, his abilities, interests, and desires will and should affect his whole life pattern.

Agriculture is basic

Quite naturally we think that if a farm boy goes to college he will study Agriculture. Agriculture is the leading industry of the world. A prosperous and efficient agriculture is prerequisite to the succes of all other industries and professions. When we realize that all that we eat except salt, and all that we wear except jewelry comes from agriculture, we can readily see

Reprinted from Science For The Farmer, Pennsylvania State College, State College, Penn.

that the agricultural industry is basic.

Agriculture needs trained people. Over six million individual farms are now operated in the United States. About one fourth of a million scientists now are serving in agriculture and its related fields. More will be needed if we are to increase and improve our crop and animal production; conserve and improve our soil; control or eliminate plant and animal pests; improve the efficiency of our processing, storage, and distributing services; discover and apply new scientific and engineering principles to agricultural production and distribution, and new social and humanistic principles to rural living.

In America today, approximately 15 per cent of the population is operating the farms to produce food for the other 85 per cent. It is therefore impossible to conceive of a very large percentage of our college graduates returning to the farm, but we must recognize that we are geared to a world economy and this requires trained agricultural leadership.

Have-nots can be helped

In many, many underprivileged countries there are people who are unclothed, unsheltered, illiterate, and dying from undernourishment and disease. They can be helped and want to be helped, and their land is capable of being brought into production of food and fiber.

Training is essential. Prosperity is dependent upon everyone being trained to work efficiently. This may mean college for some and apprenticeship or on-the-job training for others. Farming is one of the many career opportunities in agriculture. The time has passed when "anybody" can farm. Farming has become a highly scientific, complex, and difficult business. Training is as essential as for any other business or career.

Farmers' Share of Food Dollar—Last year farmers probably received about 45 cents as their share of the dollars consumers spend for food. That is the way economists of the U. S. Department of Agriculture estimate it will average out. During the coming year, they figure farmers will get about the same share as last year. Of course, returns from individuals foods will vary widely. Altogether, however, the economists now think retail prices, prices received by farmers for food products, and charges for marketing foods will average about the same in '54 as in '53.

Nebraska Farm Service

REAL VALUE OF A DAIRY FEED

NET ENERGY

Milk production requires 10 times more energy nutrients than protein nutrients. . .

Condensed from Eastern States Cooperator

Dr. R. E. Ward

YOU are interested in feeding your dairy herd so as to get the greatest net returns in milk per dollar invested in feed. This requires supplying your cows with the nutrients they require in proper proportions and from economical sources. Milk production requires seven to 10 times as much energy nutrients as it does protein nutrients.

Two methods are used in this country for evaluating energy for cattle. One is the Total Digestible Nutrient system and the other Net Energy. The Total Digestible Nutrient or TDN system has been the most widely used—perhaps because it is relatively easy to determine and morever it is evaluated in pounds or percentage, terms which are easily understood. It measures merely the difference between the nutrients in the feed and the nutrients in the feces. It does not consider energy required for digestion and does not give an adequate indication of energy actually available for production.

Because of this the Net Energy system is becoming more widely used. Modifications of the Net Energy system have been in common use in Europe for years. The Net Energy system measures the actual therms available for production. It accounts for losses in digestion, in body processes concerned with digestion, and in gasses produced in the rumen of cattle. A therm which consists of 1000

Reprinted by permission from Eastern States Cooperator, Springfield, Mass.

large Calories (1000 calories each) is an actual measurement of energy and is more accurate than attempting to measure energy in pounds.

In comparing the TDN and therm value of various cattle feedstuffs is is discovered that low fiber grains supply about one therm for each one pound of TDN. Medium fiber feeds, including high quality forage, supply about three-fourths of a therm of Net Energy for milk production for each pound of TDN, and high fiber feeds, including low quality forage, may supply only one-half therm or less of Net Energy for each pound of digestible nutrients. This is illustrated by Table I, which compares the estimated Net Energy and TDN value of several items used for feeding dairy cattle as reported by Morrison in Feeds and Feeding.

You can see from this table that TDN overevaluates certain low quality ingredients sometimes used in lower priced dairy feeds. Screenings and oat feed are commonly used to obtain low prices in dairy feeds. Screenings may be worth a little more than forage raised on your own farm. Oat feed at one time carried oat middlings that had considerable value. Present oat feed is practically all oat hulls, which are actually worth less than oat straw. Why pay grain prices for something worth less

Table I	Total Digestible Nutrients Pounds	Estimated Net Energy Therms
Corn meal (No. 2 grade)	80.1	80.1
Hominy feed	84.5	84.5
Distillers' grains	82.4	82.4
Soybean meal	78.5	78.4
Cane molasses (up to 10% of concentrate ration)	54.0	71.3
Oats (up to 25% of concentrate ration)	70.1	80.1
Wheat bran	67.2	67.2
Screenings	56.2–67.8	45–57.6
Alfalfa hay – leafy, early cut	52.7	43.5
Alfalfa hay – stemmy	46.2	34.3
Timothy hay – early bloom	50.8	40.6
Timothy hay – late seed	42.2	31.5
Oat hulls (oat feed)	31.6	19.0
Oat straw	44.7	23.3
Peanut hull bran	26.6	0

than straw? Peanut hull bran is offered to feed manufacturers and used in some low priced dairy feeds. It costs money, but has no value for milk production.

TDN also tends to give forage crops a higher value as compared to grain than actually exists. This is not of great importance when milk is high in price and grain is fed liberally. It is of importance when attempting to get economical milk production through the heavy use of low cost farm produced forages. As quality of forage improves and quantity fed increases, the Net Energy evaluation becomes more important if underfeeding is to be avoided.

According to the Morrison feeding standards which show energy requirements both as pounds of TDN and as therms Net Energy, the therms required by a dairy cow are numerically lower than the pounds of TDN. For instance, a 1000-pound cow, according to Morrison, requires 7.0 to 7.9 pounds TDN or 5.6 to 6.3 therms for maintenance and each pound of 4% milk requires 0.31 to 0.32 pounds TDN or 0.29-0.30 therms. It then appears obvious that it should be easier to balance a milk cow's energy requirement with high energy rations than with lower priced, lower energy rations.

It is interesting, however, that because of the cow's ability to draw stored nutrients from her body, differences in the energy value of the ration do not cause large differences in milk production in short term feeding trials. This has led many dairymen to believe that low energy rations are yielding as good production as higher energy rations. The difference only shows up over long feeding periods. For the first few months no difference may be apparent. In fact, differences may be small for the first lactation. Differences do show up over longer periods and for each succeeding lactation the differences are greater than for the previous lactation.

Of course, the ration must also be balanced as to nutrients required in smaller amounts such as protein and minerals and must not carry detrimental items or excesses of necessary nutrients such as calcium which are depressing when oversupplied.

A deficiency or excess of some of these nutrients can make a high energy ration worthless, so all must be present in the proper amounts. Inasmuch as freight rates, manufacturing costs and handling costs are just

as high on low energy feeds as on higher energy feeds, the higher energy feeds will generally give the most economical production.

Note also that high quality forage has a higher Net Energy value per pound of TDN than low quality forage. Why not produce high quality forage? High quailfy forage plus high quality grain furnishes a sound basis for economical milk production.

Poultry Thieves Detected by TV

Farmers in north Nottinghamshire, England are using TV as a weapon against the mobile gangs of poultry raiders who swoop down on lonely farms. When the night's program is over, they leave the sets switched on, but adjust them so that the screens are completely black and at maximum sensitivity.

An auto or truck coming within range is immediately detected and even well-suppressed vehicle show a slight flash across the screen.

Delayed Loss From Fire

The "delayed loss' caused indirectly by a farm fire often is greater than the first impact, warns the National Fire Protection Association. S. P. Lyle of the USDA Extension Service gives this explanation:

"A farm is a business, not just a place where the farm family lives. In this respect, consider the effect if fire destroys barns or other principal productive buildings. This can easily stop the farmer's main enterprise—such as poultry or dairying—and the family is left without its means of livelihood.

"Disaster is even greater when the farmer—the business manager—is injured or loses his life. In addition to the personal loss, which is paramount, the farm business is without an experienced hand to guide it.

"If the farm dwelling burns, the family may have to move from the farm. This makes care of livestock difficult or impractical and hinders other farm operations.

"In general, a severe farm fire loss may reduce the going business value of a farm to the point where cash crop production is all that can be done for a year or more. If only from a business angle, then, farmers should always insist upon strict farm fire prevention measures." *U.S.D.A.*

A VET'S NOTEBOOK . . . No. 2

Bad Health Has Obvious Symptoms

Condensed from Farmer and Stock-Breeder.

Certain conditions, such as poor food and bad housing, render an animal more likely to be ill—these are called the predisposing causes of disease. They lay the way open for the exciting, or actual, cause of the trouble.

Age, of course, is a principal predisposing cause. The very old and the very young are far more liable to contract illness than the animal in the prime of life. Take heed then: look after those foals, calves, piglets and lambs, for a good foundation in early life will stand them in good stead.

Bad feeding, especially in the young animal, lays it wide open to disease. In all species the p o o r l y fed, undernourished, vitamin starved, mineral deficient is a constant prey for bacteria.

Conditions under which an animal is housed, and the type of ground on which it is allowed to graze, play an important part in keeping it healthy. Cold, draughty, sunless, damp boxes or sties are often the cause of serious losses in young calves and pigs.

Bad pasture management, over-stocking and the turning out of young stock on to worm-infested land all add up to disease in the long run. Rivers and streams flowing through pasture can bring bacteria from other farms.

Extremes of temperature in either direction render animals prone to disease. Hot weather brings germ-carrying flies in their millions, while very cold weather tends to lower the animal's natural resistance, especially in those damp, draughty cowhouses and boxes. Don't be misled into thinking that cold frosty weather is healthy weather—it has been proved that the tubercle bacillus can exist for

Reprinted by permission from Farmer and Stock-Breeder, London, England

months even in refrigerated carcases.

Now as to the exciting causes. First on the list come the bacteria, cause of most of the infectious and contagious diseases. Then there are virus diseases such as foot-and-mouth and swine fever.

Chemical poisons are not an uncommon cause. Many of you will have experienced lead poisoning in calves which have licked new paint off loose box doors. The plant poisons, such as yew, ragwort and deadly nightshade, take their annual toll.

Not to be forgotten are the fungus diseases such as ringworm and, last but by no means least, the parasitic diseases—roundworm, husk, liver fluke, redworm, warble fly, lice, blow fly.

There are clear signs of disease. Whether it be a heavy roundworm infestation, wooden tongue, swine fever or thrush, the part of the body affected undergoes what is known as an "inflammatory change." In the first mentioned it is an inflammation of the bowels, in the second an inflammation of the foot and so on.

These inflammatory changes in organs such as the liver, kidneys, lungs, or in tissues such as muscle or delicate membranes lining the bowel, give rise to what are known as "lesions." For example, in swine fever the lesions take the form of ulcers in the bowel.

The Outward Signs

In turn these lesions naturally cause a change in function in the organ concerned. The ulcers of the bowel lead to diarrhoea, the swelling of the tongue to salivation and an inability to pick up food, and the swellings in the bronchial tubes cause a cough. In other words, the symptoms of disease.

These are some of the common symptoms of disease in a domestic animal, symptoms which should be obvious to anyone who has studied the animal in health. Lack of appetite, dullness, increased thirst, coughing, salivation (slobbering), grinding of the teeth (often a sign of pain), rise in temperature, increased rate of respiration, diarrhoea, constipation, the presence of blood in the faeces or urine, discoloration of the membranes of the eye, nasal discharge, discoloration of the urine, tightness of the skin (hide bound), pain, lameness, restlessness, groaning, grunting, sneezing, noisy breathing, staggering, and in the case of the cow a fall in milk yield.

* * *

Chicken dinners are more popular. Americans consumed three times as much chicken in 1952 as in 1940.

CREEP FEEDING LAMBS

Condensed from the Sheep Breeder.

Dr. A. J. Dyer, University of Missouri

LAMBS gain faster and attain proper market finish and weight at a younger age if they are fed concentrates and choice hay in a creep. The creep is an area accessible to the lambs, but not to their dams. Lambs usually have a favorite place to congregate and the creep should be placed at, or as near as possible to, that area. If that isn't feasible, place it where it is easily accessible to the lambs.

The entrance of lambs to the creep is made through upright boards or through rollers close enough to bar the entrance of ewes. A cross-piece fastened in a horizontal position at the opening and at proper height will also help to discourage the ewes and is more necessary after they are sheared and when the lambs have attained considerable size. Troughs—flat-bottomed ones are best, about 10 inches wide—inside measurement, and long enough so that all lambs can eat at one time. A 1x4, flatwise, should be in place about 8" above the feeding surface of the trough to prevent lambs from standing in the feed and soiling it.

A slatted hay-rack in which the very best of available legume hay is kept constantly should be used. Clean water should be furnished and a mixture of steamed bone meal and salt, equal parts by weight, should be provided, free choice. The feed trough should be cleaned regularly.

If the reader is producing commercial lambs for the early market, the ration should be different from the ration for purebreds developed for show or for replacement stock. But for both, the ewe's milk is the best feed that can be supplied. Proper feeding of the ewe feeds the lamb. Concentrates should be furnished to the ewe until abundant grass is available, and then grain feeding should be eliminated for the ewe.

For commercial lambs, the

Reprinted by permission from the Sheep Breeder, Chicago, Illinois

best ration to feed is shelled corn without any other supplement and legume hay. At 2 weeks of age lambs will eat some concentrates, but can't chew corn very well, so from 2 weeks until such time as they will consume shelled corn (usually 3 to 4 weeks of age) a mixture of bran and oats should be provided—equal parts by measure.

Introduce the shelled corn gradually. Many other rations have been compared in feeding tests and the findings indicate that for efficiency and profit, shelled corn is best where lambs suckle their dams on pasture and have access to a creep. The amount of grain that lambs will eat sometimes appears to be discouragingly small—but the practice should be continued, nonethe-less. They should have all they want all the time. When turned to good grass in early spring, the grain consumption will drop to about half of what was being consumed by the lambs when pasture was not available. But stay with the practice if your objective is to market early lambs by June while the market is still good.

On the average, lambs must be 20 to 22 weeks of age (counting twins, triplets, etc.) to reach the market and must be pushed. If the lambs are late and intended for fall marketing, do not creep feed them. For purebreds being developed, a bulkier ration and consequently less concentrated is used and, except for those that will be shown, the need for extreme fatness is not indicated.

Egg Outlook For 1954

The 1954 outlook picture for eggs presented at the recent Agricultural Outlook Conference appears favorable. The key to the '54 egg outlook lies in the restraint by producers of chick purchases for flock replacement this year, says Paul C. Clayton, extension economist of egg and poultry marketing at the University of Nebraska.

With a laying flock of about the same size as last year, the 1954 spring production is expected to be only slightly larger than the 1953 production. Coupled with a strong demand from egg breakers and a continuing high rate of consumption, 1954 springtime prices are expected to be almost as high as the record high prices of last spring. These prices will induce farmers to buy more chicks than were started in 1953. If this happens, he concludes, there may be a sharp price drop in the winter of 1954-55.

HOW TO SAVE ON YOUR INCOME TAX

Plan Now to Pay Less Tax for 1954. . . .

Condensed from Successful Farming.

Jack R. Miller

One of these nights you'll pull out your records to start the annual game—of seeing how much you can keep for yourself and how much you have to give to Uncle Sam. One point to remember—you get no stars on your chart for paying too much income tax. (Nor is it smart to pay too little!)

The income-tax law is so complicated you may miss some opportunities to save money. As an attorney formerly in the Office of Chief Counsel, Internal Revenue Service, and now helping Iowa and Nebraska farmers with tax problems, I have found many ways to save taxes. Here are some you won't find on the tax instruction sheet. Many you can use this year—others you'll want to use in planning next year's saving.

Buy Deductible Items Before December 31

Buying feed, seed, fertilizer, and supplies, making repairs, and painting buildings before the end of the year will increase your expenses, decrease your tax.

Keep these points in mind: If you are on the cash basis, you must pay for these items before the end of the year—although you can take delivery later. If you don't have the cash, you can borrow money—and deduct the interest payments when they're made, as expenses.

If you're on the accrual—or inventory—basis, you don't have to pay for them before the end of the year. But you should take delivery before December 31.

Reprinted by permission from Successful Farming, Des Moines, Iowa

Pay Son UP TO $599, Deduct Wages as Farm Expenses, and Still claim $600 Deduction

Another legal way to reduce your tax is to pay wages to your son, daughter, or older relatives you claim as dependents. You can pay them up to $599, deduct the wages as a farm expense, and still claim a $600 deduction on them as dependents.

Keep three things in mind: (1) Pay wages in line with the work they do for you; (2) make sure a couple of your neighbors see the dependent working for you—so you can use them for witnesses if a revenue agent questions the arrangement; and (3) it is safer to keep the wages below the $599 maximum—because getting too close to that figure invites questions by revenue service agents, and because you have to prove that you furnished more than half of the dependent's support.

Depreciate Grain Storage In 5 Years

For the first time this year you can depreciate grain bins and corncribs at the rate of 20 percent a year. The usual rate is 4 to 10 percent a year.

This new law affects grain storage built after December 31, 1952, and before December 31, 1956. You can start your write-off beginning the month after you finish the buildings or beginning the following year.

The fast write-off law also applies to the cost of remodeling a building—either to increase its storage capacity or to convert it to a crib or bin.

Deduct Dues and Subscription Costs

You can deduct cost of your subscriptions to farm publications you use in your business. You also can deduct dues to your farm organization, and cost of farm management services and reports.

You Can Even Deduct Cost of Help in Figuring your Income Tax for 1952

You can even deduct the amount you pay a lawyer or accountant for helping you figure your income tax. Expenses of preparing Form 1040 are deductible only on page 3 of that form. Tax, legal, and accounting services in connection with operating your farm and preparing the Farm Schedule (Form 1040F) are deductible on page 3 of the Farm Schedule.

How to Check for Maximum Depreciation

Make sure you're taking a deduction for depreciation for these items: Cost of farm improvements (other than the home you live in); machinery; draft, dairy, or breeding animals which have reached maturity; and your family auto (according to the percentage of mileage used for business. See auto

pointers later in this report).

If you have questions on how big a depreciation deduction you can take, write for Bulletin F—which you can get for 30 cents from the Superintendent of Documents, United States Government Printing Office, Washington 25, D. C. It lists the "probable" useful lives for various types of new buildings and machinery, and mature livestock. You can vary these lives according to your use, maintenance, and trade-in policies—because this bulletin doesn't stress savings for you.

On depreciation, remember that used items naturally won't last as long. So you can divide the cost by fewer years to get your depreciation deduction.

If, in past years, you have overlooked some items for depreciation, you can start listing them this year. However, you have lost the depreciation deduction of past years—unless you wish to file returns and claim refunds.

If you inherited property, you should revalue it and start depreciating it at its fair market value at the time of death of the owner—even though he had depreciated his buildings and machinery down to almost zero. This is a frequently missed deduction.

You Can Deduct Three Kinds of Losses

1. Farm operating losses. If you lose money on your farm one year, you can carry the loss back to last year and get an adjustment on taxes you paid.

There are some limitations to this and you should check with your lawyer or accountant. If you have a refund due, you can get it by filing a regular claim on Form 843—or an application for quick allowance on Form 1045.

After offsetting this year's loss against last year's income, any unused loss can be subtracted from your income during the next 5 years.

2. Property losses. You can deduct losses to your property from drouth, fire, lightning, hail, flood, disease, collision, freezing, and wind.

Here are limitations: (1) Losses to growing or unharvested crops are not deductible—since the tax law considers these to be mere losses of anticipated profits. If your crop insurance company pays off on a loss, this payment must be reported as income. (2) On losses of property other than crops, you must first subtract money you got from the insurance company or damages you collect from the person responsible for the loss—as in the case of the other driver in an auto accident. (3) If the property is completely destroyed, you cannot deduct more than your cost, less depreciation. If it is only partly destroyed,

then you can deduct only that proportion of your cost.

3. Capital losses. If you sell your farm at a loss, you can use this loss to offset capital gains —and up to $1,000 of regular income each year.

Don't Forget Auto Upkeep

Add the cost of gas, oil, insurance, repairs, lubrication, license, and depreciation. That gives you total cost of operating your car. Your deduction is the percentage of this figure that the car is used in your farm business.

For instance, if 75 per cent of your mileage goes for business, deduct 75 percent of the total.

Business Trips

You can deduct travel expenses to distant cities on business or to farm conventions. If you combine a pleasure trip with a business trip, deduct a reasonable portion for business.

Board and Room for Hired Help

Keep a record of your actual out-of-pocket cost and deduct it under the heading of "labor."

Office Expenses

If you have a room in your home devoted mainly to farm records and handling farm business transactions, you can deduct a reasonable cost for heat, light, and house depreciation. This must be figured on the percentage chargeable to that room.

Don't forget to deduct cost of office supplies.

Processing Room

If you use the basement or a room in your home for storing and cleaning eggs, for holding apples, or processing other farm products, you can deduct a reasonable part of the heat, light, and depreciation that you figure is chargeable to this room.

Road Graveling Expense.

If you add gravel to your lane or the road, as a maintenance job, deduct the part of the cost which represents your business use of the road.

Capital Gains on Livestock Sales

Briefly, this law provides that profit from sale of draft, breeding, or dairy animals held for 12 months or more can be treated as capital gains—so you pay tax on only one-half of the profit.

One typical way cash-basis farmers are taking advantage of this law is to raise their own gilts, let them farrow one litter, then sell them. These farmers pay tax on only one-half of the selling price. It's a good deal because they've already charged off all costs of raising them as expenses.

Land-Terracing Expense

If you paid money to have your farm terraced in order to check erosion and loss of topsoil, the Tax Court of the

United States has just ruled you can deduct the expense. The test is whether you are conserving and maintaining your farm land, rather than building up its productivity.

Sealing Grain

If you are on the cash basis, you have a choice (which you must stick by year after year) of whether to report C.C.C. loans as income in the year the loan is received, or to report it when the grain is actually delivered.

Inherited Farm Produce

Watch this if you inherited property this year: You pay tax only on the difference between the farm market value of growing or harvested crops, or livestock, and your selling price.

Medical Expenses

Two important taxsavers you may use: (1) travel expense to a hospital or to see a doctor can be added to your medical expense; and (2) in case of joint returns, all medical expenses of both husband and wife are deductible if either of them is 65 years of age or over. (You don't have to subtract the 5 percent of adjusted gross income.)

Condemnation Awards

If you have land condemned for roads, dams, power lines, and so on, your profit will not be taxed if you reinvest the award money in similar property.

If an easement is condemned, the award is treated as severance damages and need not be reported as income.

A few changes in your farm operation may let you take advantage of more of these taxsavers next year.

Pasture Yields Doubled

Yields from pastures can be doubled with application of 10-10-10 fertilizer, judging from results of field trial summaries released by C. J. Chapman, soils specialist at the University of Wisconsin. Chapman reports on 48 plots set up on Wisconsin farms this summer. Plots treated with 500 pounds of the 10-10-10 fertilizer yielded 5800 pounds of dry matter per acre. Plots in the same fields, but not treated, yielded just over 2800 pounds.

The soils specialist has set up his pasture demonstrations for three years on farms over the state. Sharp increases in yield this summer follow the same pattern set in 1951 and 1952. Chapman figures value received from increased forage and sets that off against the cost of the fertilizer. He comes up with a figure of $55 net profit in the fertilizer operation for each acre.

1954 Outlook For What You Grow

What to expect in the year ahead. Use this article to make your plans . . .

Condensed from Agricultural Situation.

Wheat Prospects

WHEAT FARMERS expect a smaller wheat crop in 1954 than in most recent years, as a result of their marketing quotas. If the acreage seeded approximates the national allotment of 62 million acreas and if yields equal the 1943-52 average, 950 million bushels would be produced next year. The wheat crop this year was estimated on October 1 at 1,163 million bushels which compares with the 10-year average of 1,089 million.

It should be emphasized that the 950 million-bushel figure is not a forecast of production in 1954. The figure is based on the assumption that yields will be average and that farmers will comply with acreage allotments. A 950-million bushel crop would about meet anticipated domestic and export needs for 1954-55, and leave a carry-over July 1, 1955, about as large as the record 775 million bushels expected in July 1954.

The national average price support to growers for the 1954 crop was announced October 8 at not less than $2.20 a bushel. This minimum support price is 90 percent of the August 15, 1953, wheat parity price of $2.45. If the parity price as of July 1, 1954 (the beginning of the marketing year for the 1954 crop) is higher, the support will be increased to reflect 90 percent of the parity price at that time. In no event will the support be lower than the announced national average. Support for 1953-crop wheat, now eligible for loans and purchase agreement is a national average of $2.21 a bushel.

Reprinted from Agricultural Situation, Washington, D. C.

Cattle, Hogs, Lambs

Prospects for the cattle and lamb feeder in 1954 are brighter than in 1953; for the cattle producer prospects are about as good as in 1953; and for the hog raiser prospects are favorable, though not as much so as recently.

The lower prices for cattle this year have come about chiefly because many more cattle have been marketed. Numbers on farms at the beginning of 1953 were up to a record 93.7 million, from 77 million in 1949. In 1951, when cattle were being held back to expand herds, only 26 million cattle and calves went to slaughter. In 1953, slaughter will exceed 36 million.

But the slaughter rate is now fully equal to the rate of production. Cattle numbers on farms are no longer increasing. In the next few years the annual slaughter and beef output will remain high but no higher than in 1953. This prospective stability in supplies of beef should bring stability in prices also. To be sure, cattle prices will not go back to their levels of 1950-51. But unless demand for beef should weaken unexpectedly or a widespread drought should give an extra boost to cattle marketings, cattle prices next year seem likely to end their persistent declines of the last 2 years.

Prices may be most favorable for fed cattle. Feeders appear to be putting fewer cattle on feed this fall than last and the supply of fed cattle in the first half of next year may be moderately smaller than this past year. Choice steers are selling for almost $5 per 100 pounds more now than at their June low. Prices next spring, although declining seasonably, may be a little higher than this past spring. As feeders bought their feeder cattle considerably cheaper last fall, they stand a good chance of making average or better profits in feeding.

Somewhat higher prices for fed cattle would give a firmer tone to prices of feeder stock. However, there is little reason to look for a really great improvement in feeder cattle prices next year. There will be wide differences in feeder prices by areas and especially by grades, with higher grade stock once more receiving considerably higher prices than the lower grades.

After 2 years of low prices for hogs, hog farmers cut their production from 102 million pigs in 1951 to 84 million this year. As a result hog prices have risen to their highest level ever except for 1947 and 1948. The hog-corn price ratio has been favorable for hog production, and producers are again taking an interest in expanding. Their intentions were to reduce the

total fall pig crop by 5 percent, but it looks as though by late this fall farrowings will be back to or above last year. The increase will continue. The 1954 spring pig crop seems likely to be 5 to 10 percent larger than the 1953 spring crop.

About the middle of 1954 the hog slaughter rate will rise above the same period this year. Until then prices of hogs will continue relatively high. By next fall, when the seasonal price decline begins, the hog slaughter rate will be moderately above this year. Prices may therefore go down more than usual, averaging lower than this fall. Prices are not expected to be greatly depressed, however. Prospects are for favorable returns from all hogs raised for marketing during 1954.

Whether hog prices continue favorable into 1955 depends on whether producers over-expand. That can not be foreseen yet.

The 1953 lamb crop was 7 percent larger than the 1952 crop and the largest since 1947. However, slaughter is up even more and the number of sheep and lambs on farms is apparently being reduced slightly. The prospect is for somewhat fewer lambs to be slaughtered next year than this. Prices for lambs will again be affected by the supply and price of cattle but may be just a little higher than usual relative to cattle prices. Prices for wool will again be determined mainly by supports and are expected to average about the same as this year.

Eggs and Poultry

Farmers produced more eggs and poultry meat in 1953 than in any other year, and 1954 is likely to be another year of high production of these products. Egg and poultry prices in 1954 are likely to continue satisfactory to producers, although springtime egg prices in 1954 are not likely to hold at such high levels as in 1953.

Poultrymen's feed costs have come down 5 to 12 percent in the last year, and are expected in the next 6 months or so to hold near the current level.

About the same number of laying chickens are expected to be on hand January 1, 1954. This indicates a springtime egg production only slightly larger than a year earlier. With no great increase in the springtime egg supply, and with continued good demand, the prospect is for a springtime egg price only a little below the favorable springtime levels of 1953.

The present lower prices of broilers than a year ago, is partly compensated by reduced production costs. In 1954, output of broilers probably will continue to increase at about the 5 to 7 percent rate estimated for 1953, and prices are expected to average at about the level of the first 9 months of 1953.

The turkey outlook for 1954 will be considerably affected by the result of marketing the 1953 crop. If farmers adhered to their late-summer marketing intentions, half of the crop remained for marketing after November 1, but in November and December there will be a sharp reduction from last year in the quantity marketed. In mid-October, most quotations for turkeys were slightly higher than a month earlier. Judged by activity in blood-testing turkey breeders for inclusion in hatchery supply flocks, the turkey industry is making plans for a larger output in 1954 than this year.

Dairy Products Forecast

The year 1954 may bring dairy farmers many experiences similar to those of 1953. Consumer demand for milk products probably will be about as strong in 1954 as it has been. Milk production may be about equal to the prospective level for 1953 — 118-119 billion pounds. However, the carryover of manufactured dairy products into 1954, including Government price-support holdings, will be a record high.

The total supply of milk and dairy products in 1954 will be equivalent to around 126 billion pounds of whole milk, compared to 123 billions. In 1953, commercial and farm uses of milk products took the equivalent of 115 billion pounds of whole milk. Even if no sales out of Government stocks are made, supplies of milk products for 1954 would substantially exceed demand at prices approaching this year's level.

Prices which farmers receive for milk and butterfat in 1954 will depend largely upon the level at which dairy supports will be set for the marketing year which begins April 1, 1954. Under the law now prevailing it is mandatory that the Secretary of Agriculture announce a support price for milk and butterfat at between 75 and 90 percent of parity. In the current marketing year the objective has been to support these products at 90 percent of the parities which prevailed at the time of the announcement last spring.

The United States average price received by farmers for milk in 1953 was $4.35 per 100 pounds compared with $4.85 in 1952. The butterfat price in 1953 averaged 65 cents per pound compared to 74.1 cents in 1952. Prices of feeds are not likely to change much from present levels in the coming year. As a result, relationships between dairy-product prices and feed prices will be no more favorable than average the next 12 months. Gross receipts from the sale of milk and dairy products in 1954 are likely to be smaller than in 1953. However, costs also probably will decline slightly, so that net income from

the dairy enterprise may be about the same in 1954 as 1953.

What's Ahead For Cotton

The supply of cotton in the United States for the 1953-54 market is estimated at 21 million running bales. Production is larger than the quantity likely to be used in and exported from the United States, and the carryover next August 1 is expected to be at the highest level of the post-war period, about 8.4 million bales.

The supply of Upland cotton is 125 percent of the "normal" supply and the supply of extra-long staple is 198 percent of normal. Supplies of both types are so large that minimum marketing quotas were proclaimed by the Secretary of Agriculture on October 9. The acreage allotments total about 18 million acres compared with 24.6 million acres in cultivation on July 1, 1953.

Production of 10 million bales as called for by marketing quotas on the 1954 crop would be more than a third less than the 1953 crop. Such a sharp reduction in the cotton crop will most likely mean smaller cash receipts from the sale of cotton in the 1954-55 crop year than in the current season.

Domestic mill consumption of cotton in 1953-54 is expected to be between 9 and 9.5 million bales compared with the 9.5 million bales consumed in 1952-53. Exports are expected to increase from the 3 million bales of 1952-53 to about 3.3 million bales.

* * *

An acre of rye will save up to 560 pounds of protein supplement and 100 bushels of corn when used as pasture for sows and small pigs.

* * *

Exports of cotton yarn and fabric are expected to be smaller during the current season than they were in 1952-53, delivery to the military forces of cotton textiles will probably be smaller, and the consumption of synthetic fibers may hit a record high. These factors indicate a decline in domestic mill consumption of cotton.

Foreign producing countries are starting the 1953-54 marketing year with relatively large stocks of cotton which will probably be sharply reduced by August 1, 1954. Production of cotton abroad will probably decline and foreign free-world consumption is expected to be maintained at high level. The net result of these forces will probably be a small increase in United States exports of cotton.

The 1953 cotton crop, as estimated on October 1 was about 0.4 million running bales above the 1952 crop. The indicated yield of cotton per harvested acre of 315.4 pounds is the highest on record.

Keep Swine Thrifty

Condensed from Wisconsin Circular 459.

1. Control Mange and Lice with Benzene hexachloride or Lindane.

Benzene hexachloride and Lindane are rapidly replacing the oil and kerosene dip for hog mange and lice, and are reducing the cost of mange and lice control.

Benzene hexachloride may be purchased either as a wettable powder or as a dust. The wettable powder of BHC may be 5, 6, 10, or 12 per cent gamma isomer, depending upon the source of supply, and Lindane wettable powder is a 25 per cent concentrate. The dust is generally sold as one per cent gamma isomer.

Add 40 pounds of the 5 per cent wettable powder to 100 gallons of water (wettable powder of other percentages should be used according to directions.) One gallon of the solution should be enough for three or four hogs. Apply the solution as a spray. Cover the animal's body thoroughly, with special attention to head and ears. Complete spray will require about one quart of solution per pig.

Best results are probably secured soon after weaning. For older hogs, application may be made at any time. Don't spray or dust within one month of slaughter. Benzene hexachloride dust may be put on with any mechanical dusting equipment. It is especially useful in cold weather when a wet treatment is not advisable.

Lindane, a more purified product, is equally as effective as benzene hexachloride when used in the proper concentration. It's a little more expensive, but does not have the somewhat disagreeable odor of benzene hexachloride. Lindane is usually purchased as a 25 per cent concentrate. Mix 1½ pounds of this concentrate with 100 gallons of water. This dilution recommended by the manufacturer of this product gives a .05 per cent Lindane spray. Follow the instructions on the package for best results.

2. Control Roundworms with sodium fluoride.

Common roundworms cause hog raisers heavy losses every year. Growth may be seriously hampered, resulting in great waste of feed. Because roundworms are so common, there is a constant reservoir of infection.

Sodium Fluoride is 95 per cent effective against large roundworms (ascarids). It costs little and the treatment is simple. The sodium fluoride is combined with the grain mixture and fed dry for one day only. It is highly poisonous if improperly used.

One treatment when hogs are 8 to 12 weeks old should be adequate. If necessary, another treatment can be given about 2 months later.

Make a mixture of the dry grain ration and sodium fluoride as follows: To 100 pounds of regular ration add ¾ pound sodium fluoride. Mix thoroughly. One hundred pounds of the mixture will take care of 40 weanling pigs for one day. Put pigs back on regular feed the day after treatment.

To figure how much of the grain mixture you will need, here are some averages:

a 50 pound pig eats 3 pounds of feed a day

a 75 pound pig eats 4 pounds of feed a day

a 100 pound pig eats 5 pounds of feed a day

a 150 pound pig east 6½ pounds of feed a day

The treatment should not be given to pigs showing symptoms of intestinal disturbance, nor to pregnant sows. If sows are to be treated, do it 2 weeks before the breeding season.

Give only one or two treatments. There appears to be no residual or accumulative effects on pigs providing only one or two treatments are used. Sodium fluoride should be plainly marked POISON and kept out of reach of children and farm animals.

Treatment alone is not enough to hold down losses from roundworms. Much damage is done before the adult worm can be killed by the sodium fluoride. Therefore a good sanitation program is essential to reduce roundworm infection.

Saving Your Ewe Lambs? Saving good ewe lambs for replacements can result in high quality, profitable flocks. Saving poor lambs is one of the quickest ways out of the sheep business. That's the advice from George Allen, Jr., sheep specialist at VPI. He says to build flocks, save only lambs from the larger, heavier milking, heavier shearing, good producing ewes. Lambs unfit for market are unfit for replacements.

MILK 3 TIMES A DAY—SLEEP 8 HOURS A NIGHT

Your cows won't mind if you stagger the milking interval to suit your convenience, not theirs. . . .

Condensed from Capper's Farmer.

George A. Montgomery

Advantages of milking three times a day

You get 15 to 20 percent more milk. Test goes up slightly.

is a grind if you space the milkings at 8-hour intervals. There isn't time for enough sleep between milkings, and you have to take an extra nap to get the rest you need.

on what they eat. There are other advantages, too.

But milking three times a day

man who would like to milk three times a day, but hesitates to do so because milking every 8

Reprinted by permission from Capper's Farmer, Topeka, Kansas

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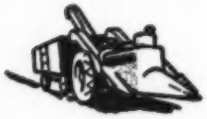

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You get 15 to 20 percent more milk.

Test goes up slightly.

You get more fall and winter milk when prices are strong.

You get extra milk if you're establishing a base.

Cows are more comfortable.

Udders stand up better; there's less udder injury.

Cows have a longer productive life.

You can get more feed into cows by feeding three times a day.

YOU can get 15 to 20 percent more milk if you milk your cows three times a day. That extra milk might mean a lot to you if you are trying to establish a milk base as high as you can get it. Your cows will eat more grain if you feed them three times a day. And they will show more profit on what they eat. There are other advantages, too.

But milking three times a day is a grind if you space the milkings at 8-hour intervals. There isn't time for enough sleep between milkings, and you have to take an extra nap to get the rest you need.

New research, recently completed at the Minnesota station, indicates that milkings don't have to be spaced evenly. Dr. W. E. Petersen and his co-workers at the station found that two-time milkings spaced at intervals at 10 and 14 hours, instead of equal 12-hour intervals, made no difference in the amount of milk the cows gave.

Petersen pointed out that Wiad Institute in Sweden has shown that the intervals might be 8 and 16 hours with no loss of product, even with cows that milk up to 14,000 pounds a year.

We asked Peterson, a recognized authority on milking, what this would mean to the man who would like to milk three times a day, but hesitates to do so because milking every 8

Reprinted by permission from Capper's Farmer, Topeka, Kansas

hours doesn't give him a full night's sleep.

Petersen said milking intervals could just as well be 7 hours, 7 hours, and 10 hours. Spacing the night and morning milkings 10 hours apart would enable the milker to get a full 8 hours of sleep.

That will be good news to a lot of farmers, including two young Iowa dairymen. Wayne Clausen, Clinton county, and Melvin Inman, Humboldt county, have been milking three times daily during fall, winter and spring months. They like the extra milk, but they don't like the hours.

Clausen likes to start three-time milking in the fall. The increase it brings gives him more milk to sell in fall and winter months when prices are high.

And it is a lot better for cows that produce as heavily as the best ones in the Clausen herd do. One cow, Dido, produced 23,000 pounds of milk, 899 pounds of fat in 365 days on two-time milking. When she was milked three times a day during the first part of her lactation she gave 1,800 pounds, containing 591 pounds of fat, in 195 days. That's an average of 86 pounds of milk and more than 3 pounds of fat a day.

Another cow, Sensation, produced 85 pounds of milk and just under 3 pounds of fat daily for 127 days; a total 10,910 of milk, 365 of fat in 4 months and 1 week.

Pert, another purebred, jumped from 568 to 714 pounds of fat when she was milked three times a day the first 214 days of her lactation.

Susan, a grade, produced 593 pounds of fat in 313 days as a result of 214 days of three-time milking. Susan's record was made when she was 11 years old. Her best annual production on two-time milking was 504 pounds.

When Inman started to milk three times a day last fall, his test went from 3.6 to 3.7. Milk production rose about 17 percent.

"Most of my 18 Holsteins freshen in September and October," he said. "I started three-time milking October 1 and quit when field work became pressing.

"One big advantage, as I see it, is that the cows are more comfortable. Before we started three-time milking, cows would come in with udders so tight that they would step nervously from one foot to the other in an effort to get relief. That is hard on a cow. I believe three-time milking will lengthen a cow's productive life. You want to keep the good ones around as long as you can.

"Udders hold up better when cows are milked more frequently during the months of heaviest production. Milk flow holds

up better, too. Cows are giving almost as much after 6 months as at the end of the first month after freshening.

"Sixteen of my cows are young. Five are 2-year-olds. But I had a 330-pound fat average at the end of 6 months. One cow made 700 pounds in 305 days, and four or five hit 600.

"Last winter I sold 1,200 to 1,300 pounds of milk a day from 18 cows. I took in $3,000 for each $1,000 worth of feed fed."

Inman milked last year at 7 o'clock in the morning, at 3 and 11. A hired hand fed the cows at the morning and afternoon milking, but Inman did the feeding at night. It took him 90 minutes to feed, milk, take care of the milk, and wash the utensils. By the time he had finished it was just 6½ hours until time to start the 7 o'clock milking. A man can't get along well on that much sleep.

The new findings indicate that Inman might just as well milk at 7 in the morning, 2 in the afternoon and 9 at night. That way, he could get to bed around 10:30 and get a good 8 hours sleep.

Do cows drop off when three-time milking is discontinued? That depends on the cow. Queen, one cow in the Inman herd, produced 72.5 pounds of butterfat in November, 69.8 in April, 63.5 in May. When twice-a-day milking was started in June she dropped down to 43.7 of fat for the month.

A 2-year-old that made 53.9 in October also made 53.4 in May, but dropped to 45.3 in June, first month of two-time milking. Another heifer that made 46.1 in October and produced 44.2 in May, dropped to 30 pounds in the first month on two-time.

Feed your pregnant ewes so that they gain slightly more than the weight increase of the lamb they are carrying, advises Graydon Blank, extension animal husbandman at Michigan State College. This is to prevent pregnancy disease or lambing paralysis.

Avoid Pig Rickets, Add Yeast To Feed

Watch out for signs of rickets in pigs. Lack of sunshine and supplementary vitamin D in the ration are the causes, Michigan State College veterinarians say.

Dr. Frank Thorpe suggests including irradiated yeast in the feed. That will take care of the Vitamin D need. You can buy it at a feed store and mix it in the feed yourself, or you can have your local elevator do the job. The rate is a half-pound of yeast to the ton of feed. If your pigs already have rickets, Dr. Thorp advises, consult your veterinarian.

How To Ease The Squeeze in '54

Prices you receive have gone down a great deal more than prices you pay. Here's how to manage in '54. . .

Condensed from Michigan Farm Economics.

Let's face the facts. The higher prices of the past few years in farming are gone. From the recent high in July 1952 to September 1953, prices received by Michigan farmers for products sold dropped 17 percent. Prices paid by farmers dropped 3 per cent. Purchasing power of farm products dropped from a high of 108 to 91 for the same period. A purchasing power of 90 to 95 may be more nearly normal than that which has prevailed for the past inflationary decade.

Most of the things farmers have done during the past few years have turned out all right financially. It has been relatively easy to cover mistakes in management, in business judgment, and in investments. For '54 and the years immediately ahead that doesn't appear to be the situation. As a matter of fact, even in 1953 some farmers were finding it difficult to pay their financial commitments of the past 3 or 4 years.

As we look ahead in '54 some of the items which may influence the decisions of farmers in their farming programs:

(1) Uncertainties as to the prices of farm products, most of which will be no higher than in '53; (2) Cost of purchased, non-farm produced items about the same as in '53; (3) Farm land prices steady to slightly lower; (4) Wheat quotas and allotments a reality; (5) Corn allotments a probability; (6) Farm credit prehaps a bit tighter; and finally (7) All of us will be a year older (and we hope, smarter).

Good management is always important. In periods of price adjustments, such as at present, it is of even greater importance. To be successful in '54, farmers will need to spend even more time than formerly in analyzing the farm business, and in making decisions as to what is best for their particular farms. There are always chances for improvement in farming. What improvements can you make in your

Reprinted from Michigan Farm Economics, East Lansing, Michigan

situation and farm business in '54?

Young Farmers

What will be good business for young farmers in '54? Most young farmers are expansion-minded. Their farm program is on the "make". They often need everything in the "book" from more land, to more livestock, to more machinery and more credit. In most instances their net worth will be on the small side. Their goal should well be to i n c r e a s e their volume of business — even though such a program involves an increase in indebtedness and financial risk.

For those who wish to make money in '54 an adequate volume of business per farm and per man is a "must." For such young farmers as may be short of capital, it will be good business to proceed slowly, and to explore ways and means of attaining the increased size and added volume of business with a minimum of capital investment on their part.

Capital requirements on the part of a farm operator may be reduced considerably by renting a farm or by renting additional fields; by getting some operations done through custom work; by buying good used machinery and power units; by exchange of machine work with neighbors; by joint ownership of expensive machines; and by growing his own dairy cows.

Established Farmers

The established farmer might well ask himself the question: Am I making the best use of my labor, land and available capital? If not, and if he wants to make money in '54, he should give plenty of thought as to his best way to adjust his production and to increase his efficiency in operations.

The established farmer who is relatively free of debt is in an enviable position. His main concern is to keep his farm operating on a good business basis and to remain financially sound. If he has not already done so, he could well consider remodeling and modernizing his home.

The established farmer who has a fairly heavy debt load, in view of present price relationships, should give much thought and planning to remaining financially sound. He should get his finances in as strong a position as possible and make every effort to reduce his debt load. Here again, operating his farm at maximum capacity and with low costs is essential.

For some persons it may be desirable to consolidate some of their short term debts and, if possible, convert them into a longer term farm mortgage loan.

For All Farmers

As a result of the restrictions of wheat quotas and allotments,

as well as of corn allotments, most farmers will be substituting oats, field beans, sugar beets, hay or pasture depending on which of these crops best fit into their farm program.

The present trend in farming is toward more specialization. The 1950 Census Report for Michigan indicates (1) fewer farms with cows, but more cows per farm; (2) fewer farms with hens, but more hens per farm; and (3) fewer farms with sows, but more sows per farm. This trend should continue in '54 whenever there is a possibility of reducing labor or equipment costs and of otherwise increasing efficiency through greater specialization.

Fertilizer An Important Key

Commercial fertilizers have been one of the best farm "buys" in recent years. Fertilizer prices in the past 10 years have increased only 35 percent, which is less than other farm supply items.

Even with the changes in price relationships, most farmers will still receive good dividends for more-than-average fertilizer applications on farm crops in '54. It will be profitable on most farms to make the recommended spring applications of nitrogen on wheat, and early summer applications of nitrogen on corn. Early spring and fall applications of fertilizer — for example 400 pounds of 0-20-20 per acre every second year, or 200 pounds each year — on hay and pasture fields are also good business and should be done by more farmers.

Lime where needed is a "must" for reducing costs and increasing production, especially with alfalfa and the clovers. Farmers will find it good business to have their soil tested, determine if the lime and fertilizer requirements are being met, and then make applications according to recommendations.

Doing The Job Quicker

All farmers will find it good business to continue to search for ways and means of handling the farm business quicker and easier. The ways of doing this will differ from farm to farm and may vary from the simpler job of work reorganization, to that of additional machinery and equipment and to that of remodeling and equipment and to that of remodeling of a farm building. With the high farm wages that will prevail in '54, high output per dollar of labor cost is essential to reduce the costs per unit of product, as well as providing the possibility of increasing the size of business with the same or smaller labor force.

Investments and Expenses

Farmers spend money for four major groups of items: (1) Fam-

ily living; (2) Farm operating expenses; (3) Short run capital investments such as for purchase of livestock, machinery, lime and fences; and (4) Major capital investments such as for land, farm buildings, the dwelling, and for tile drainage. Expenditures for farm operating expenses must be kept well under control in '54. However, expenditures for fertilizer, lime, grass and legume seed, and for good seed, will continue to pay good dividends. Some farmers may find it necessary to use their farm machines another year and to purchase only such new machines as are critically needed.

Expenditures for good livestock, if needed to achieve capacity production on the farm, will continue to be good investments. For the farmer who is reasonably well financed and who has the know-how — and who does a good job of buying, feeding and selling — cattle and lamb feeding should be more profitable than in 1953.

To rent or buy land is an important question. While the trend in land values is on the downswing, there will be many good buys in '54 for the farmer whose financial position enables him to make a major downpayment (for example, 40 to 50 percent of the purchase), and also for the farmer who has an opportunity to buy extra land to "round out" his present farm unit.

Farm real estate values as an average for the United States declined 4 percent during the year ending July 1, 1952. Declines have been largest in the west south central and in the mountain states.

On some farms new buildings or additions to and the remodeling of present buildings may be justified in 1954, when such additions or changes will enable the operator to organize his farm business on a better basis. This will be especially true when he is able to get much of the lumber from his own farm and do a lot of the construction work himself.

Markets

Many farmers can obtain higher profits by planning their time of marketing. For example, the milk base on many farms can be greatly improved by having more cows freshen just prior to or early in the base period. On some farms, additions to the herd by purchase of "fresh" cows may also be advisable during the "base period." Baby chicks purchased early (before March 1) will permit getting seasonably high egg prices in the fall.

Hog prices are expected to continue favorable through most of '54, but with more than a seasonal decline in the last three

months of the year. Lamb and mutton prices for '54 are expected to average the same as in 1953. January and February will be good months in which to buy babychicks to take advantage of the higher egg prices expected in the first half of '55. Demand for most dairy products in '54 will probably be about the same or slightly lower than in 1953.

Farmers will probably be well advised not to take much less than support prices for the grain or beans they have to sell. There does not appear to be much price advantage, however, in holding potatoes for future sale.

Insurance

Farmers in general will find it good business to review their insurance program of fire, wind, hail, life and liability to see that they are amply protected. Anyone who has any doubt in his mind as to the need for such a review should talk with a farmer who has recently experienced losses from such events.

Fertility Key To Champion Corn Yields

Indiana's 1953 State Senior Corn Growing Champion, J. Herbert Roadruck, believes that good corn production practices make championship yields, and he overlooked nothing that would contribute added bushels to his corn crop.

Roadruck grew his championship yield of 198.5 bushels per acre in a 21 acre field devoted to hybrid seed corn production. Last year the field was in a mixed grass-legume pasture, and it was manured twice before plowing. Prior to planting, the field was disced three times and harrowed twice. Roadruck planted his corn on May 15 at eight inch intervals with 39½ inch rows. He cultivated once with a rotary hoe and twice with tractor cultivators.

Roadruck believes in providing plenty of plant nutrients for his corn, and he applied a total of 1390 pounds of fertilizer per acre in a 21 acre field devoted to hybrid seed corn production. championship yield.

The White County farmer plowed under 350 pounds of 60 percent potash and 360 pounds of 47 percent phosphate per acre, the equivalent of 1000 pounds of 0-21-17 analysis. He also put 250 pounds of 4-16-16 in the row when the corn was drilled.

The corn was side dressed on June 25 with 140 pounds of anhydrous ammonia to the acre. This treatment supplied 115 pounds of nitrogen to the acre. Roadruck is convinced that heavy fertilization for corn is quite profitable if it is used along with other essential agronomic practices.

Grass Is Your Best Crop

How to get more feed at less cost and have a better soil left. . . .

Condensed from Eastern States Cooperator.

C. W. Clemmer

"HIGH quality forage provides the cheapest source of food nutrients. It supplies practically every known material a dairy cow needs in protein, energy, minerals, and vitamins for maintenance, reproduction, and for producing milk," according to R. E. Hodgson, assistant chief of the U. S. Bureau of Dairy Industry. He adds, "The basis for any successful dairy farming is an abundance of good forage as pasture, silage, and hay for year round feeding."

Forage is of highest nutritive content, most palatable and most digestive in its young, leafy stage.

Intensive management, where the farmer has applied the controls that are essential to produce quality forage in abundance, enables him to (1) extend the pasture season at both ends, (2) bolster up the midseason when there is normally a sag, (3) harvest and preserve the surplus as grass silage or hay when at its most nutritive stage, (4) get maximum production at high levels of fertility with high yielding species of legumes and grasses, (5) get more rapid recovery with renewal growth, (6) improve the land and (7) increase the carrying capacity of the farm. It's almost like eating one's cake and having it too when you get more feed, at less cost, and have a better soil left.

An acre of good forage yields 18 to 20 tons or more green weight for the season. It will analyze 18 to 22% of protein on a dry basis (about 1/5 the green weight). In the pre-bloom stage it is 70 to 80% digestible, very palatable and animals eat large amounts whenever they can. When quality forage is consumed at the rate of 2½ to 3 pounds of hay equivalent per 100 pounds body weight, (substitute 3 pounds silage or 4 pounds grass for 1 pound hay) it

Reprinted by permission from Eastern States Cooperator, Springfield, Mass.

provides most of the nutrients required for maintenance of the 1100-pound cow and production of 6000 pounds of milk. The cost of 100 pounds of total digestible nutrients (TDN) as pasture is about $1.60, grass silage $2.30 and hay $3 as compared with a cost of $5.70 per 100 pounds TDN from grain at $80 per ton.

Since 1935 the average milk production per cow in the United States has increased at the rate of about 75 pounds annually, from 4184 pounds in 1935 to 5314 pounds in 1950, but due to the increase in grain fed, the TDN consumed per cow from pastures declined during these 15 years from 1542 pounds to 1269 pounds. Animals also follow the lines of least resistance and eat less roughage as more of their requirements are supplied as grain.

In 1935 the average cow consumed 943 pounds of grain which provided 52% of the nutrients required, 48% coming from forage. In 1950 she consumed 1629 pounds of grain that provided 71% of the nutrients required, leaving only 29% to come from forage.

A cow fed quality forage will produce about ¾ as much milk as the digestible nutrients would provide from roughage alone. The 1100-pound cow should eat daily if available of high quality: 100 to 150 pounds of pasture or 75 to 125 pounds of grass silage or 25 to 30 pounds of hay. This type of forage provides 16 to 18 pounds TDN daily, 8.7 pounds of which is used for maintenance of the 1100-pound cow and 0.324 pounds for each pound of 4% milk or enough for 25 to 30 pounds of milk daily.

Compared with 1935, the average cow in the United States produced, in 1950, 1.64 pounds more milk for each additional pound of grain consumed. At $80 per ton for grain, the additional milk cost 5¼c per quart for the grain alone. In cost account studies, it has been shown that grain constitutes less than half of the total feed cost and only one-quarter of the total cost of milk production.

Why not resolve to go intensive on high quality, abundant forage production and utilization? Test your soil and apply lime to get the pH to 6.5. Plow down phosphorus and potash to attain a high level of basic soil fertility. Apply complete fertilizers at seeding time and top-dress after each top removal with adequate amounts to provide the nutrients for high yields. At the Maine Experiment Station a yield of 4857 pounds dry matter per acre removed 165 pounds nitrogen, 42 pounds P_2O_5 and 155 pounds K_2O. Early application of nitrogen on grass stimulates early

growth. High basic fertility enables plants to withstand drought years better.

Choose the species which are most productive and provide a constant dependable succession in the Northeast. Orchard grass and ladino in the most situations; Lincoln smooth bromegrass and alfalfa where adapted are most dependable in midsummer; birdsfoot trefoil with smooth brome or timothy can come to the rescue in July and August; Reed canary for wet spots and uplands. Where these crops can be grown and properly managed as permanent sods there should be no need for annual crops like cereal grains for spring and fall or sudan and millets for mid to late summer. These are useful in the emergency or as supplemental crops, but entail higher costs than do the well managed perennials. In the long pull, irrigation of perennial, high producing sods, timely adequate fertilization, rotation grazing, young grass silage and hay are best. Bluegrass is a weed in an intensive grassland program. Its place is on the steep hillsides or over flooding meadows that are too treacherous to culture intensively. Where bluegrass persists, make the most of it with nitrogen.

Probably the most intensive pasture system is that known as "ration grazing" as practiced in New Zealand and parts of the British Isles. The object is to make the most of a limited amount of high quality forage. In ration grazing the land is stocked at the rate of 100 mature cows to the acre (25 cows on a quarter acre) confined for approximately one hour's feeding and then removed to a resting lot for water, minerals, shade and chewing the cud. There may be several intervals of such intensive grazing daily depending upon the supply of highest quality young succulent forage available. A portable, single electrically charged wire is moved along at each successive grazing, thereby achieving the maximum utilization of grass at its most palatable and nutritious stage.

Extremes like this are only practical where the supply of forage is limited, where milk is relatively low in price and supplemental concentrate grains are scarce and high in cost, if not prohibitive. However, it is worthy of mention here because it illustrates well a principle from which many may derive a valuable lesson, namely; If we wish to get the most from the best, we must apply intensive methods.

A more normal rotation grazing system calls for six to eight cows per acre with six or more paddocks, with a variety of species, and possibly varying

ratios and applications of fertilizer, depending upon the desired response and the prevailing grasses or legumes. Cutting a few swaths around the paddock before turning cows into it and clipping the entire paddock the day before cows are removed provides dry hay to reduce the risk of bloat, especially where 50 to 70% or more of the vegetation is legumes. It also keeps the fence rows clear to avoid shorting the electric charge and maintains uniform growth and weed control. Cut the surplus for grass silage or hay when at its best quality, without fail.

The total area grazed must be so managed as to provide a continuous succession of young succulent growth over the longest possible grazing period.

Lamb Pasture Pays

Lambs pay as much as any other class of farm animals for good pasture, agree Ralph H. Grimshaw, extension specialist, and Oscar E. Share, Guernsey county agricultural agent.

They refer to Willis Parker's experience in grazing 42 lambs on 3½ acres of rape and oats pasture from August 1 until about September 8. Parker and Son operate a farm near Winterset. The Parkers' sixteen ewe lambs, sold for breeding purposes, averaged 74 pounds each and sold for $15 a head. Sixteen wether lambs averaged 77 pounds and brought $16.70 a hundred. Ten lambs averaged 60 pounds each and went at $17.30 a hundred.

Share says they sowed a bushel of oats and 5 to 6 pounds of Dwarf Essex rape per acre on June 10. They fertilized with 50 pounds of 3-12-12 an acre. Rape made the best stand where the Parkers pulled the drill seed-tubes out of the grain-tubes and broadcast the rape ahead of the drill.

By August 1, when the lambs were turned in, the rape and oats were about a foot high. The lambs, Corriedale-Merino crossbreds, did not eat the rape at first. They were getting a mixture of oats, corn and soybean oil meal at the same time. Parkers had been creep-feeding the lambs but stopped 3 to 4 weeks before turning into the rape-oats pasture.

After a fey days, Share says, the lambs learned to like rape and "ate it greedily from then on." Grimshaw suggests that farmers plan now to have improved pasture for lambs next year.

Ohio State University

Don't Miss Out On Roadside Profits

Some definite ideas for selling your farm produce at retail. . . .

Condensed from American Fruit Grower.

R. T. Meister

FRESH fruit, fair prices, and full measure all add up to profits at the roadside market, according to statements of roadside market operators made recently in a survey conducted by **American Fruit Grower.**

Men like Frank J. Mohr of Mohr's Orchards, Fogelsville, Pa., prove that roadside selling can be big business, for they sell the entire fruit product from their 200-acre fruit farm direct to the roadside customer. Ed Knight of Greenville, R.I., sells all the fruit his orchards can produce and buys more from other growers. Dorrance T. Green of Wilbraham, Mass., sells all he can grow, but takes pride in the fact that he sells only what he can grow.

These growers and many others like them find good profit in roadside selling because customers know that what they buy is fresh and of good quality. Dorrance Green says in this regard, "We give a fair package always, at a fair price. Our quality of fruit never varies, and many customers order 'sight unseen' from their cars."

James Shoemaker, Jr., of Hamonton, N.J. is always sure that the customer gets good, full measure "and a little more," and sells all the produce of his 60 acres in fully ripened, orchard-fresh condition. He even lets customers help with the picking if they wish, or if they are in a hurry for an order.

Cheerful, personal service and plenty of it seems to be another keynote to success on the roadside, and the most successful have a good sales staff on hand for weekends, although they usually are able to handle the business themselves through the week. Dorrance Green feels,

Reprinted by permission from American Fruit Grower, Cleveland, Ohio

though, that personal service either from him or his wife helps keep good customers who like to deal with the owner.

Retail marketing from the orchard has many real advantages for the grower, in that it often provides his only way of getting a net return on his No. 2 apples. He can also get into the profitable retailing of by-products such as cider and other fresh fruit drinks, and he can sell some of his berries and smaller cash crops to the many people who are attracted by the larger displays of his major fruits.

Many growers join James Shoemaker, Jr., in their pleasure at having good cold storage facilities that let them sell into, or through, the winter. Last August Shoemaker put 200 twelve-pint slats of blueberries into cold storage and took orders at his roadside stands for Thanksgiving use. He sold every pint at 50 cents, he says.

To help insure repeat sales, of course, consistent good quality of fruit comes first, but there are also many little ways to help build up a good, steady clientele. Confidence in the grower is the most important facet, and customers should know when they buy that the fruit at the bottom of the pack will be of the same quality as that on top.

Growers find it a good custom to refund money or replace produce willingly if it has been found unsatisfactory. Also they like to let customers buy any quantity they want and at steady prices. Dorrance Green sets his prices at the beginning of the season, and the customer can count on their remaining the same throughout the season

Advertising helps attract customers to the roadside market. Christiansen's Orchard and others have found that radio advertising produces the quickest results; however, many get good response from local newspaper ads. All kinds of gimmicks are used to attract motorists, such as pet animals to amuse the children, special festivals, dressing salespeople in costume, etc. Many growers have their salesrooms in storages where customers can watch loading machines and packing operations, and some have glassed-off cider presses for the customers to watch in operation.

A free apple to each youngster helps draw regular customers to the stands of George Smith at Slatersville, R.I., and Dorrance Green.

One of the best attractions to a roadside market is plenty of off-the-road parking space. Many drivers will drive on, rather than stop on the highway.

Good, large readable signs along the road, far enough in advance of the market, help at-

tract customers. The grower should remember that the driver of a fast-moving car has little time to read small print or to figure out a complicated sign.

A number of devices have been found to help with day to day operation of the stand. Warning bells, such as those found at gas stations, have been installed by some growers to announce the arrival of customers.

This permits the growers to leave the stand unattended during the week when business is slight and they need go to the stand only when the bell rings.

Harold Rogers of Southington, Conn., has established the practice of placing a box of change beside his five-cent cider dispenser and letting the customers help himself to change. Rogers feels that this display of confidence in the customer helps develop the customer's confidence in him.

On the whole it has been discovered that cheaper apples sell better if packed in large containers, while the better grade fruit can be sold in two-, four-, and eight-quart containers. Also, it has been found that fruit of about the same quality as that found in stores should be priced high enough to prevent unfair competition with the stores. The lower grades which cannot compete may be sold more cheaply.

Blood Cell Count Helps Spot "Hardware Disease"

A laboratory test to determine the white cell count in the blood of cattle is now being used to help diagnose cases of "hardware disease" according to veterinary medical authorities.

Writing in a current veterinary medical journal, workers at the University of Missouri Veterinary Clinic reported on this new aid in detecting the disease. "Hardware disease," or traumatic gastritis, is caused by cattle swallowing metal or other sharp objects. These may penetrate the stomach walls and threaten vital organs.

Animals affected with this condition may show a rapid loss of weight, shallow breathing, stiff gait with arched back, and reduced milk flow. Veterinarians can use surgery to remove the objects and save the lives of the animals if the condition is noticed soon enough.

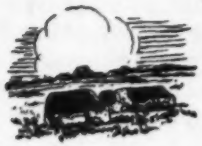
Diagnosis of the trouble sometimes is difficult, but veterinary authorities said the new findings may help solve this problem. A study of the trend of the white cell counts is used to detect the disease.

Guernsey Breeder's Journal

He Doubled Pasture Capacity, Tripled Grain Yields

Condensed from Kansas Farmer.

Dick Mann



THIRTEEN years of constant progress on a proper land use program have made it possible for Carl Miller, Pottawatomie county, Kansas to double livestock carrying capacity of pastures and triple grain production per acre.

The first 840 acres of the Miller farm were purchased in 1939 and a second 400-acre farm was added in 1948. Of the original 840 acres when purchased, 800 acres were in cropland. "It was rented land and had been for many years," says Mr. Miller, "which means everything had been taken off and nothing put back."

Of the 400 acres purchased later, 200 acres were in cropland, 40 acres were wasteland, and the rest native pasture. About 30 acres of wasteland were recovered thru seeding to alfalfa-brome. Balance of wasteland was drained and returned to crop production.

Today, out of the total 1,240 acres in the farm, only 300 acres are in cropland. All the rest is in brome, alfalfa, combinations of brome-alfalfa, lespedeza and native pasture.

Mr. Miller chuckles now when he recalls what the farm was like when he and Mrs. Miller moved on in 1940, but it wasn't funny then. "The wheat that year," he says, "made only 13 bushels an acre. Pastures were mostly sunflowers, sumac and buckbrush most of the fences were down, and the house was so infested with rats they sounded like horses during the night. Because of bad fences and a water problem we did not move our cattle to the farm that first year. Our timber was in bad condition since the 1934 drouth had killed many of the trees. In general, the entire farm was one big mess."

Here are some of the improvements made on the farm over the years:

1. Pastures were mowed and seeded to native grasses, with good stands of big and little

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bluestem being obtained. In late years a spraying program for pastures was added with the result that most of the grassland is now free of sumac and buckbrush. Stumps of trees cut down, also were treated for sprouting with good success.

2. All old fencing was torn down and most of it replaced with new fencing, which was completely rearranged to insure better use of land. This job included eliminating 9 creek crossings in the fence lines.

3. An intensive liming program has been carried on to provide an average of about 2 tons of lime an acre on everything but native pastures.

4. A mile-long diversion ditch was constructed on one part of the farm, with terraces below it. A seep area was treated with a drainage ditch that now makes it usable.

5. All new corrals have been built.

6. Two good wells have been developed and 4 ponds constructed. "When I bought the farm there was one pasture where cattle had to go a mile and a quarter to water from some areas," says Mr. Miller. "I believe it was costing me 10 to 15 pounds of meat per head in lost weight, in addition to being bad for the pasture."

7. A combination windbreak and water erosion control band of trees was set out along one bottom-land field.

8. Thirty-five acres of bottom land treated with rock phosphate.

3. Establishment on cropland of the following rotation: alfalfa, 3 years; corn, 2 or 3 years; wheat, 1 year. "I may have to insert a crop of oats ahead of the wheat," says Mr. Miller. Object, tho, is never to let any one crop remain on the same land more than 3 years in succession. Sweet clover is being tried this fall on some cropland.

10. A grain fertilizer program that calls for 50 pounds of nitrogen an acre for corn, 100 pounds of 12-24-0 on wheat at seeding time and a top-dressing of 40 pounds of nitrate in the spring.

What has all this done for production on the farm? Corn averaged 50 bushels in the dry year of 1952 and 40 bushels in the drier year of 1953, but has run up to 100 bushels in better years. Wheat averaged 39 bushels in 1952 and 40 bushels in 1953, only 13 bushels in 1940.

Carrying capacity of pastures has been doubled. In the dry summer of 1953, Mr. Miller pastured 100 head of yearling steers on 270 acres of alfalfa, brome, lespedeza and prairie grass and still has a good cover for this winter. He plans normally to carry 250 head of calves thru

winter and graze that many in summer. Right now water is the limiting factor as ponds are dry except for small pools.

A second major benefit of the Miller proper land use program is less labor. By reducing cropland from around 1,000 acres to 300 acres, Mr. Miller is getting by with one full-time hired man and part-time help of a neighbor.

Milk Pipe Line Cleaning Study

Farmers who are still taking milk pipe lines down for cleaning are wasting their time. A study conducted at VPI Agricultural Experiment Station by dairy researchers showed that in-place cleaning of the pipe lines is satisfactory, and there are no greater bacteriological counts of the milk flowing through the line than when the line is taken down for cleaning.

In the in-place cleaning system, the pipe lines were left intact and cleaning was done by forcing cleaning solutions through the pipe in much the same manner milk is forced through. An acid cleaning solution was used twice weekly. Sanitizing was done by using both chlorine and 180° water. There was no measurable pick-up of bacteria in the line due to the use of in-place or circulation-cleaning methods. This was true for both the raw milk section and the pasteurized milk section of the line.

Time needed to do in-place cleaning was only one-third of that needed to take the pipes down for cleaning. The cost of cleaning material was about the same for the two methods.

Virginia Polytechnic Institute

Value of Antibiotics

Here's how Dr. Lester Hanson summarizes the value of antibiotics in hog feed:

1. Antibiotics have their greatest value for young pigs, especially during the suckling period.
2. For maximum gains, feed antibiotics from the time the pig starts to eat until he reaches market weight. The biggest boost from antibiotics comes before the pig reaches 100 pounds.
3. Antibiotics are not nutrients and cannot be substituted for a balanced ration. The higher the disease level in which pigs live, the higher their response to antibiotics in feeds.

Christmas Tree Farming

It looks like a good business, if prices stay up. Heres how it's done. . . .

Condensed from Crops & Soils.

Maynard Alan King

MANY farmers in the Northeast are growing a relatively new type of cash crop.

Christmas trees can be grown almost anywhere if the annual rainfall is sufficient to support native forest. However, they do prefer a well-drained sandy loam or silt loam that is relatively free of hardwoods. If the land has been recently cultivated and fertilized, the tree may grow too rapidly and become too coarse.

To harvest a crop each year, the farmer must divide his plot into smaller plots equal to the number of years it will take for his first planting to grow to cutting size. In other words, a farmer who has 10 acres of land and trees that mature in 10 years will plant an acre each year. He will not realize any returns on his investment until the tenth year, but he will be reimbursed annually, thereafter.

A good Christmas tree has several definite requirements. These are (1) a symmetrical shape; (2) stout branches; (3) ability to retain its needles over a considerable period (4) an odor of the woods.

It is important that the farmer choose a tree that is in demand in his area. In New York State, the principal trees grown are: (1) pines, red and Scotch; (2) spruce, Norway and white; (3) first, balsam and Douglas.

The pines are gaining increased attention in Western New York and should continue to do so. However, they are susceptible to snow damage and are occasionally attacked by the pine sawfly as well as other insects.

The spruces comprise the majority of the trees grown in New York. The needles are long and dark green in color. Spruce are slow to start, but make rapid gains later. This characteristic makes the pruning shears an essential tool.

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The firs are the best Christmas trees because of their fine color, shape, and needle-holding ability. However, they are more exacting in their soil and climatic requirements than the others, and consequently the balsam has had somewhat less use away from its native habitat —the Adirondacks.

After picking the species, the problem of planting and spacing arises. Mr. Robert A. Reed of Allegany County, New York has this to say from the standpoint of spacing. "If one species is planted, the spacing in feet can be 4 by 4 or 5 by 5. If the species are mixed, the spacing should be 6 by 6." The grub-hoe is probably the best planting tool for the small grower.

The grower who plans to sell a good Christmas tree cannot forget his crop once he has it planted. He must give proper care and protection to his plantation if he expects to market a merchantable product.

"You must prune." This is a basic axiom to the Christmas tree grower, unless he is growing firs. Pruning is usually started when the tree is 4 years old, and is continued until the tree is harvested.

The pruning technique simply involves cutting the terminal and lateral leaders about 8 inches from the previous year's growth. This enables the tree to "fill out" instead of becoming tall and open. Pines must be pruned during the last 2 weeks of June while spruce can be pruned at any time.

Protection must be provided for the crop against fire, insects and diseases, livestock and rodents, hardwoods, and thieves. Many growers in Allegany County are building farm ponds near their trees to guard against fire. For insect control, others are building marshes to encourage the bird population. To control blister rust, Mr. Reed has removed gooseberry plants from his farm.

The other measures can be summed up in a few sentences. (1) Fence your trees. Don't let livestock eat or trample your crop. Girdling by rodents is prevalent during mild winters. Measures must be taken to eliminate these pests. (2) Keep the hardwoods out. Cut the weed trees and paint the stumps with a sodium arsenite solution. (3) Watch for thieves. Local police officials will help. There is a fine in New York State of 10 dollars per tree cut.

Tag "Sold" Trees

As is the case with all cash crops, the Christmas tree must be harvested and sold. It is a good practice to tag the trees to be cut. If the tree is sold during the summer or fall, the buyer will hold little respect for the grower if he receives the wrong tree.

There are various tools for

harvesting the trees, but perhaps the best is a curved, pruning saw.

Cutting should be done from mid-November to early December Pines and firs will not drop their needles if cut early, but spruce will, and for this reason must be set with their butts on the ground. Scotch pine should be cut early for two reasons. First, the branches become brittle and will bruise easily if the tree is cut while frozen. Second, they develop a yellow color in swamps if left until December.

Never cut a tree until it is sold. This is another basic principle to the grower. An unsold tree will inevitably end in a bonfire.

In Allegany County, the income from the sale of Christmas trees has amounted to $100,000 the past 2 years. Mr. Reed obtained the following prices on the stump during 1952: Scotch pine, $1; Norway spruce, 75 cents; and red pine, 50 cents.

What does the Christmas tree grower think of his crop? Phillips Foster and his father of Alfred, New York have grown trees for 8 years. Phil has this to say concerning his trees. "Christmas tree farming is a good business as long as the market stays up."

Other growers are voicing similar opinions. As a result, they are saving their soil, adding beauty to their land, and are paying for their Christmas shopping, too.

Starter Fertilizer Pays on Corn

Starter fertilizer paid large dividends in the form of increased yields in an irrigated corn experiment conducted by Nebraska's Outstate Testing Project. On the Jay Hauxwell farm near McCook in Red Willow County, the planting time application of 10-40-0 near the seed resulted in an average yield increase of 29 bushels of corn per acre.

The application of nitrogen fertilizer at five different rates varying in amounts from 0 to 320 pounds per acre—side-dressed when the corn was 10 to 18 inches tall—had no significant influence on the yield. The non-fertilized corn yielded 72 bushels per acre.

In another corn experiment under irrigation, 120 pounds of nitrogen per acre side-dressed when the corn was 10 to 18 inches tall increased yields from 35 to 93 bushels per acre. The most economical application of nitrogen was eighty pounds per acre. This resulted in an 88 bushel yield, an increase of 53 bushels.

New Approach to Mastitis

"Let-down" hormones milk out mastitis. . . .

Condensed from The Farmer.

Omar Shonkwiler

ONE DAY last winter, Vandon Jopp, Hennepin County, Minnesota dairyman, looked at his cow "Lucky" and thought she was misnamed.

"Lucky" had freshened with one quarter of her udder plugged tight with mastitis. Within 24 hours the other three quarters were shut off with the infection. It looked as if neither the calf nor Mr. Jopp would ever get any more milk out of "Lucky." But five minutes after a veterinarian injected a water-clear fluid in her neck vein, milk began to drip from the cow's udder. Mr. Jopp milked out the thick, clotty mastitic milk. Then followed one treatment with an antibiotic carried into the udder in sterile water and "Lucky" was back on the production line.

The wonder-working injection which started milk flow was oxytocin, the "let-down hormone," used by veterinarians to start milk flow in newly farrowed sows. Normally, preparation for milking causes a cow to release oxytocin into her blood stream from her pituitary gland. Injected with a booster dose of this hormone, a cow really lets her milk down. The flow carries flaky, stringy, mastitic milk before it. The udder is opened up so any other treatment needed can reach the seat of infection readily. In some cases, no other treatment is needed. The cow has literally been "milked" of her mastitis.

This is a new approach to the treatment of mastitis. It is an approach that emphasizes finding the trouble early, stimulating milk flow in the infected quarter, and calling the veterinarian if frequent milking out fails to produce normal milk.

A veterinarian should give the booster doses of oxytocin, but you can speed milk flow with a warm water wash and massage.

What about antibiotics in ointment that you can buy and use yourself? They are best used as a preventive when an udder

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has been injured or following surgery on the udder.

The man behind this new approach to mastitis treatment is Dr. I. A. Schipper, a veterinarian and research fellow in dairy husbandry, University of Minnesota.

Dr. Schipper has used the "letdown" hormone on more than 100 cases of mastitis in the last 21 months. The flushing out was followed with an antibiotic in most cases, but about 15 of the mastitic udders have been returned to normal production by milking out only. The cows were in the dairy herd at University Farm, St. Paul, and in farmers' herds.

The advantage with the booster dose of oxytocin followed by an antibiotic treatment is that both veterinarian and farmer can go on to other jobs. When the antibiotic is in sterile water or other liquid, one treatment usually clears up the trouble.

Antibiotics in ointments do not penetrate the udder well enough to help much if milk is already abnormal, Dr. Schipper believes. He has studied mastitis treatments since 1950. At University Farm, antibiotic ointments used as recommended have given no better results than periodic milking out of the quarter. To test the penetration of antibiotics in various carriers, Dr. Schipper treated infected and normal udders of cows at a packing plant, using stained preparations. Then the cows were slaughtered at 12-hour intervals following treatment. Dr. Schipper froze the udders, sawed them open, and looked for the stained material. "The more severe the mastitis, the less the penetration of ointment," he reported. Some ointment reached the upper part of normal udders of cows slaughtered 32 hours after treatment.

There is another advantage to treating with an antibiotic in sterile water or other liquid carrier. The antibiotic disappears sooner from the cow's milk. There's less chance of milk from the herd stopping action in the cheese vat at the creamery when the cow is put back into production. The University Farm creamery has been able to use milk for cheese after only one milking was discarded from a quarter treated with antibiotic in sterile water. When the antibiotic was carried in oil, three milkings had to be discarded. Some antibiotic remains in milk for as long as five milkings following treatment with an ointment. Pasteurization does not remove all the antibiotic from milk. Using the flush-out, water-borne antibiotic system for mastitis treatment also reduces the danger of anybody being sensitized to an antibiotic by getting small amounts of it in milk.

Veterinarians are finding oxytocin valuable in field treatments of mastitis. Dr. F. H. Bathke, McLeod County, Minn., used it last year in at least a dozen cases. Results were good where the farmer called him early, for newly-freshened cows, and where the quarter was hard and plugged up. Dr. D. E. Zinter, Hennepin County, has used the hormone for about six months on mastitic cows. "It really gets 'em flushed out in a hurry," he said.

More About New Scours Remedy— It has been conservatively estimated that around 15 percent of all calves die either of scours or of diseases resulting from scours within a month of birth. This would add up to a death toll of over 5½ million calves during the year. This national loss due to scours runs well over $15 million per year. There are many calf scour medicines on the market of varying curative value. The Wisconsin Alumni Research Foundation believe that they have developed a new-type most effective scour prevention treatment, known as plasmylac. This foundation was the originator of Warfarin, the most effective rat and rodent control material known today. Plasmylac, in several extensive tests, has almost eliminated the incidents of calf scours.

Soybean Samples Germinating Poorly

An alarming number of soybean samples submitted to the state seed testing laboratory show poor germination—some as low as 40 percent—reports A. S. Carter, assistant Indiana seed commissioner.

And, Purdue agronomists state that only about one-half of seed from fields inspected for certification purposes meets the minimum standard of 80 percent germination for all varieties accepted.

Carter explains that many soybeans were harvested at less than 10 percent moisture, and that many seeds were split or damaged as they passed through the combine cylinder. He adds that the damage is not always visible—in some instances, the seeds are not split but the germ has been torn loose internally.

Since many farmers have saved soybeans for seeding next spring, Carter suggests getting seed tested now so that some indication of performance can be predicted. Agronomists do not recommend using seed which germinates less than 70 percent.

Purdue Extension

There's a Right Way to Drain

To achieve good results, each drainage system must be planned scientifically.

Condensed from Soil Conservation.

Lowell Woodward

SOME soils lend themselves to drainage, others are questionable. Drainage depends on such things as available outlets for water, kind of soil, and source of the water.

Take the situation of H. C. Miller, who farms near Provo, Utah, for instance. Miller's land had a good drainage outlet, but the soil was extremely heavy. A system of drains about 4 feet deep was installed some years ago, but it didn't work well. It carried off a little water, but not enough.

The trouble came from a 3-foot layer of sand under most of Miller's farm at a depth of 6 to 8 feet, which was a carrier of water. An interceptor drain was laid down 7 to 11 feet deep in the layer of sand. It has been very successful, and 10 acres of swamp have been converted to highly productive crop land as a result.

Or, consider the case of Ralph Henderson, who has a 10-acre field near Spanish Fork, Utah. A swampy area in the center was becoming larger each year. He decided to quit trying to farm the entire field because it produced nothing but weeds, and his equipment got bogged down frequently. He then learned that the Nebo Soil Conservation District was doing some drainage work, and decided this might be a place to get some help.

Investigation showed, that on the upper part of the field the soil was very sandy down to 6 or 7 feet in depth. It was heavier near the center. Water moved rapidly through the sand, but slowed down and came to the surface when it reached the

Reprinted from Soil Conservation Service, Washington, D. C.

heavy soil; therefore, the swamp.

A 6-inch drain was installed through the lower edge of the sandy area at a depth of 6 feet. Its upper end was Y-shaped, to increase its intake of water. In a few days the land was dry enough to plow. Today no one would ever imagine that there had ever been a swamp there.

* * *

The 1953 lamb crop totaled 19,702,000 head, 7 per cent more than the 18,479,000 head raised in 1952. It was the third successive increase over the preceding year since the record low lamb crop in 1950. It is still 18 per cent below the 10-year average.

* * *

On half of a 40-acre field on the farm of Roy Lyman, southwest of Payson, there was water at or near the surface. Drainage was a complicated problem. Part of the water came from deep springs, part through a layer of the field. The water showed up where the gravel layer ended, causing the lower part of the field to be wet. Drains were placed in this layer at the edge of the wet area. These picked up an extremely large amount of water. The springs then were tapped with separate drains, but it is too early to determine their ultimate effect, although indications are that they are going to work very well.

Drainage problems are widely varied and must be individually assessed and solved.

Perry and Duane Harper own adjoining tracts of land at Pleasant Grove. To handle the problem on Duane's land a drain was located almost entirely on Perry's land, where there was a sand layer which was responsible for a wet area downslope.

Drainage problems seldom stop at property lines, and it is usually more economical, and often necessary, that several farmers work together on drainage problems. Land capability surveys often locate high water tables on land which may show no visible signs of need for drainage. But crop yields are poor and often the high water tables bring trouble from alkali.

Last year, the Soil Conservation Service purchased a power auger, mounted on a jeep, samples the soil to a depth of 12 feet. It has two major advantages over hand augers: it is much faster, and it makes possible the sampling of gravel and sandy soils, which cannot be done by hand.

Drainage will increase production on many farms, but to be effective they must be planned and installed scientifically.

WHAT DOES YOUR COMMUNITY NEED?

Just follow the Granger's service creed and you can make life richer . . .

Condensed from Capper's Farmer

Grant Salisbury

IN COMPETING for honors in the National Service Contest, Grangers have developed a formula for accomplishment that recalls the World War II slogan:

"The difficult we do immediately—the impossible takes a little longer."

It's a simple formula. Your organization can use it to improve your community.

THE GRANGE FORMULA

1. Appoint a committee to survey the community and decide what things need to be done.

2. After projects are selected make a committee responsible for each. This delegation of duty is important—everybody needs a job.

3. Let the public know through press and radio what you're doing so you can have their support and approval.

4. Work with other groups in the community. This is not a one-organization job.

5. Warm up on one of the simpler projects to get your group clicking and achieve that feeling of accomplishment.

6. Grangers have proved that after the warm-up, the tougher the job the better they like it.

The contest was born 6 years ago when the late Albert Goss, great agricultural statesman, was Master of the National Grange. He and Ed Condon, who is director of Sears-Roebuck Foundation, a philanthropic organization interested in bettering life in rural America, originated the idea.

The Grange directs the contest. The Foundation finances liberal prizes—$15,000 for first, $5,000 for the second, $2,000 for third and on down to $500 for tenth. Condon considers the re-

Reprinted by permission from Capper's Farmer, Topeka, Kansas

turn on this investment phenomenal, pointing out that "hundreds of communities are bettered and millions of dollars worth of improvements brought about." (Over 2,500 Granges are competing this year.)

Though the prizes furnish a lot of incentive, Grangers all agree the real reward comes from the feeling of accomplishment, the awakening of a cooperative spirit, the joy that comes from friendships made fast while working for the common good.

It will freshen your faith in democracy to look briefly at such Grange accomplishments as these:

HARMONY GRANGE, in South Carolina, won first prize last year for bringing its community in Edgefield county back to life. The rejuvenation began with the remodeling of the open-country Harmony Methodist Church which had fallen into disrepair. This Grange raised $23,000 to make the sanctuary beautiful once again, provide bright new Sunday school rooms, spruce up the outside with paint and landscaping. They even added a combination heating and air-conditioning system.

The church provided a focal point for community life and Harmony turned to building a community center next door. When complete it will include a community hall, playgrounds, tennis and volley ball courts, softball diamond and a skating rink.

The people of FRIEND, NEBRASKA, can't say enough about their Grange which won second prize in 1952. The town had a nice hospital and an annex, too, but more beds were needed. There was money to cover the cost of materials for another annex, but not enough to pay labor cost. So Friend Grange donated the labor.

Working under a construction foreman, farmers brought tractors and equipment to dig the footings. They put in floor joists, laid flooring, put on the sheathing and capped the whole thing during a 33-man roofing bee. The annex, used for elderly patients, is termed by medical people "finest of its kind in Nebraska."

This Grange also staged a soil conservation field day, remaking an entire farm while a thousand people watched. They got 4-H club work underway in the community and now sponsor six clubs, furnishing volunteer leaders and lending other assistance. They gave the cemetery a much-needed renovation and got joshed about tying that in with the hospital.

Aside from the satisfaction of doing a job, Friend Grange is reaping benefits for its farmer members. Rural fire protection is being set up in cooperation with the city fire department. Grangers have been trying to get a vo-ag department going, but under the school district set-up the cost of a building to house it will have to come from city funds. City folks, grateful to their Grange friends, are looking favorably at the proposition.

A community hall was the big effort for SHAWNEE GRANGE near Lima, Ohio, third prize winner in 1952. Shawnee needed a meeting place; found many other organizations in the same predicament. They proposed a plan and solicited support from individuals, organizations and business. The support was forthcoming in the form of cash contributions and hands to help with the construction.

Now the Shawnee Grange Community Hall is providing a place for meetings and recreation for 4-H clubs, Y-teens, Lima Women's Club, Lima Foreman's Club and many others. Best of all, their young people have a desirable place for recreation.

NORTH GRANGE came out of the "cut-over country" of northern Minnesota to take home first prize in 1949. People of lesser spirit would have considered it impossible to whip the school district problem that faced North Grange. Consolidation had made it necessary for the children to make a 40-mile round trip on the bus over terrible roads. State law wouldn't permit them to go to a school only 5 miles away in the next county.

North Grange went direct to the state legislature in St. Paul and got a bill passed for the specific purpose of remedying the situation!

Those plagued by poor telephone service can appreciate the meaning of community improvement as rendered by SCHLEY GRANGE, Orange county, North Carolina. When a telephone company said it would provide service but couldn't afford to put up the lines, Schley Grangers got busy and strung 57 miles of first-class line. They won first place in 1948.

Farm folks in Seward county, Nebraska, thank the GOEHNER GRANGE for bringing fire protection to rural areas. The project was started in 1948 when the Grangers enlisted volunteers all over the county to get landowners' signatures on the petitions required by state law. The result was the first

county - wide fire district in Nebraska.

Contracts were made with fire departments of seven towns to handle specialized equipment for rural fire fighting. Cost has been financed by an everage annual mill levy of .38. Since 1948 the Goehner Grange has numbered every farm in the county, posting a sign at the farmstead entrance; had maps of the district made; and raised money to buy resuscitators.

* * *

If the 24.8 million persons on United States farms averaged the same annual beef consumption as city consumers they would consume 1.5 billion pounds.

* * *

In 1951, the year Goehner brought home first prize in the national contest, they sponsored a rural-urban banquet. This was no minor-league affair. It was staged in Lincoln, the state capitol, and attended by 500 business men who were there as guests of 500 farmers from all over the state. Senator George Aiken of Vermont gave the address.

Through Grange efforts, children in orphan homes have received Christmas gifts and needed clothes, foreign visitors have been entertained, Grange community halls have served as disaster relief centers, polio and other funds have been swelled, service men's canteens supplied and manned, Red Cross blood collections sponsored, and safety promoted.

Some of the stories about community service will put your heart right up in your throat. A Grange in Maine adopted a "Polio Boy" and found that in all of his unhappy 13 years no one had ever given him a real Christmas party. They are financing his medical care.

A southern factory worker, unable to get the farm out of his blood, toiled long hours and lived frugally to buy an 80-acre farm. As he worked the land he and his wife struggled to build a home. The neighbors admired and took a liking to the young couple. One day, without ceremony, they came with their hammers and saws and made quick work of a job that would have taken months. These neighbors were members of the local Grange, which benefited by gaining two fine new members—the young couple.

Above all, this experiment in grass roots democracy has proved that the golden rule, "Do unto other as you would have others do unto you," is the most logical formula ever written for personal happiness and contentment.

FLATTEN THE ROBBER

Grass waterways may be the long sought answer to raw ditches cutting their way through fields. . .

Condensed from Acco Press

WHAT to do about gullies has been a problem since the first thinking plowman saw the water run-off robbing him—leaching his humus, dragging his soil down to the sea.

Parts of the answer have been found by many men in many places, all working with the whole problem of saving and building soil fertility. Part of the answer has been found in different forms of tillage with various kinds of plows. Part was in spreader dams, part in contour furrows, part in terraces. . . .

But always there remains the ditch, the busy robber of the soil. Farmers filled washes and ditches with rocks, planted kudzu, seeded tough can. They built cement steps, like ladders, to break the fall of water. They scraped neat steep-sided drain ditches. Each plan helped a little. Some helped a lot, especially the kudzu, where it could be established.

Then came the flood — the fence-lifter, the gully-washer, the once-in-10-years disaster. Rocks washed. So did cane. Even kudzu. Water cut under the cement steps, ate back the sides of the drain ditches. The farm went down the gully. The ditch grew.

Sil conservationists and farmers kept trying.

Now they have come up with what they believe is the rest of the answer. This one is called grassed waterways or sodded terrace outlets. It flattens the ditches. Conservationists who have planned these waterways and farmers who have used them believe that in this practice they have at last discovered what should have been discovered in the first place—the very foundation of saving and building soil fertility on land where ditch-wash is the robber.

"In such a situation, the whole plan of soil conservation should begin with the establishment of the sodded waterway," says W. A. Pool in charge of the Soil Conservation Service at Pilot Point, Texas, which assists

Reprinted by permission from Acco Press, Houston, Texas

the Denton-Wise Soil Conservation District. "Just as the Foundation of a house should be built first because the whole house rests on it, so the sodded terrace should be built and planted and set in growth before other parts of the soil-saving plan are started, because the sodded terrace outlets are the foundation of soil conservation when the problem is to stop water run-off."

When the waterways are sodded, Mr. Pool explains, then terraces are built to drain into them, spreading the water out and leaving the top soil in the field. Contour-worked crops in planned rotation then are grown on the terraced land. Covercropped, fertilized, mulched and managed, the soil will grow in fertility.

One of the best examples in Texas of soil improvement through use of sodded waterways can be seen on the Gracie Ranch four miles east of Pilot Point, Texas. On this 3,100-acre spread, which has eight farms under the management of Jeff Pedigo, terraced outlets have been sodded to Bermuda grass and overseeded with legumes and King Ranch Blue Stem.

Having found that terraces without sodded outlets were often doing the land more harm than good, Manager Pedigo, with the Gracie Ranch for 27 years, began grassing waterways under the direction of the Soil Conservation of the Denton-Wise District in 1948. Today on the 2,400 acres he has in cultivation on the ranch there are 22 grassed outlets totaling 142 acres. He explains that the sodded waterways are planned so that they can be fenced into permanent pastures when possible.

After the Denton-Wise Conservation District had approved Mr. Pedigo's application for assistance, the Pilot Point Work Unit made a land-capability inventory, estimating the quantity of water run-off over a 10-year period and staking the waterways. Then he was ready to go to work establishing them.

In establishing the sodded waterways, Mr. Pedigo follows six steps. This practice usually requires about twelve to eighteen months for growth and spread of grass before the field is terraced.

The first step in preparing for sodding is to put up the land exactly as if it were being prepared for growing cotton. If terraces are needed on the sodded area, they are put in. Then the ground is bedded and rebedded. Successful growth of Bermuda requires as good a preparation as cotton or any other crop.

Then, about February, if

moisture is right, Bermuda grass roots are harvested by plowing up the Bermuda and following with a spring-tooth, side-delivery rake, raking the roots into wind rows. It is necessary to keep the roots moist until they are planted.

The third step is to get the roots into the well-prepared seed bed. He drops the roots by hand about 18 inches apart and covers immediately by rebedding. Then he harrows it flat. Although Mr. Pedigo sods Bermuda in March or February, it can be sodded

as a terrace outlet. This is the fifth step. On the Gracie Ranch he has built 27.5 miles of terraces, turning the terrace overflow out over the grassed outlets. He encourages the construction of wide outlets, since the object is to spread the water, thus preventing erosion. The Gracie outlets begin with a width of about 100 feet, increasing in width about one foot per acre of land terraced into the outlet. This depends, of course, upon the slope. This practice of spreading out the water is fol-

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is becoming established.

By the fall of the second year Mr. Pedigo usually has an excellent cover of Bermuda and he is ready to use the sodded area

Saw it nearly all sod when I came on it 27 years ago. Used horses and mules and modern machinery on it. Saw it turned to the plow and bring bumper

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The third step is to get the roots into the well-prepared seed bed. He drops the roots by hand about 18 inches apart and covers immediately by rebedding. Then he harrows it flat. Although Mr. Pedigo sods Bermuda in March or February, it can be sodded any time of the year when the moisture is right and Bermuda will grow.

The fourth step is to mow the grass the first season and to overseed the Bermuda in the fall with a legume. On some sodded waterways he has planted King Ranch Bluestem. But since the last three years have been unusually dry, the Bluestem has not responded as well as he had hoped. Some of Mr. Pedigo's neighbors planted cotton and other spring row crops in the Bermuda on their farms the first year. Cultivation of the row crops encourages the growth of the grass and discourages the growth of weeds while the grass is becoming established.

By the fall of the second year Mr. Pedigo usually has an excellent cover of Bermuda and he is ready to use the sodded area as a terrace outlet. This is the fifth step. On the Gracie Ranch he has built 27.5 miles of terraces, turning the terrace overflow out over the grassed outlets. He encourages the construction of wide outlets, since the object is to spread the water, thus preventing erosion. The Gracie outlets begin with a width of about 100 feet, increasing in width about one foot per acre of land terraced into the outlet. This depends, of course, upon the slope. This practice of spreading out the water is followed because as the depth of water doubles, water's cutting force increases four times.

The sixth step is to fence the Bermuda grass terrace outlets soon after the terraces are constructed. Livestock help to maintain the outlets and provide additional income.

With his 22 sodded terrace outlets in prime condition and the terracing about complete on the whole project, Mr. Pedigo is looking forward to the next normal year of rainfall and steady prices.

"And it will come," he says. "It always has. I've watched this land through a lot of changes. Saw it nearly all sod when I came on it 27 years ago. Used horses and mules and modern machinery on it. Saw it turned to the plow and bring bumper

crops. I wore out some of it making bumper crops.

"Then we terraced and contoured and rotated. Bought fertilizer. Sprayed bugs. Still the top soil got away from us. Sometimes in floods it got away in bunches.

"Then they thought up sodded terrace outlets. A simple thing: just widen the ditches good and wide, level them off, tie the soil down with grass, empty the run-off – all spread out thin – into the outlets. Then the land stays at home, with the water in it."

Then he laughs tolerantly, the way a man laughs who has lived long enough to see a big problem in the round. You know he is going to say something really wise, and he does. "Grassed waterways! Why, it's the very foundation of saving the soil from the run-off. Terraces and contours and crop rotation and mulches and fertilizers—they all wash down the gullies finally, unless you hold up the water. Sodded waterways do it.

News About Bloat—Can Detergents Prevent It?

A possible new way to prevent bloat, and a new theory on what causes the trouble, has just come out of the University of Wisconsin.

Small amounts of ordinary household detergents, fed to cattle, will stop bloat. But R. E. Nichols, who directed the research, warns against trying the remedy yet.

So far it's just a piece of research, with interesting possibilities. But the Wisconsin scientists have learned this:

Cows bloat, Nichols believes, because certain types of feed sink to the bottom of the rumen (or paunch) and raise the water level.

"When the water goes up," he says, "it blocks the opening to the rumen, and the cow can't belch as she normally does. The gas builds up, and she's bloated."

Alfalfa and other legumes are more troublesome than other hay, or grass, because they sink so rapidly into the rumen liquid. Concentrates sink quickly, too, but don't need as much digestion as roughages before they pass on into the second stomach.

How might detergents prevent bloat? They change the type of bubbles produced in rumen digestion—make small, frothy bubbles into large ones that can be belched out. Get rid of the bubbles, and feeds float better on top of the liquid in the paunch.

Farm Journal

HEAVIER CALVES— AND NO SCOURS

Antibiotics may be the answer. Here are test results. . . .

Condensed from New Jersey Farm and Garden.

Frank Wright

ONE out of five calves will die before they are four weeks of age, and this is a conservative figure. Reports indicate 90% of these deaths will be due to various types of scours. This mortality rate among dairy calves is far too high and much can be done to prevent it.

Sanitation and a dry and draft-free environment is your first line of defense. But if you're still having trouble, what then? Antibiotics may be your answer.

Investigations conducted by Dr. K. Otto Pfau, of the Dairy Research Farm at Sussex, N. J., and at other experiment stations throughout the country have shown that antibiotics decreased the number of cases and severity of calf scours. Some antibiotics are of no value, but Terramycin and particularly aureomycin have proved very effective when fed to young dairy calves.

Dr. Pfau studied two groups of calves under identical feeding and environmental conditions. The experiemental group, however, received aureomycin fed in two equal portions by adding it to the calves' milk which was offered in nipple pails twice daily, beginning at three days of age. This study was continued for 60 days.

"In regard to the incidence and severity of scours in the two groups," reports Dr. Pfau, "there were about half as many severe cases and these of shorter duration in the aureomycin group than in the control group. The calves receiving aureomycin

Reprinted by permission from New Jersey Farm and Garden, Sea Isle City, New Jersey

had a definitely thriftier appearance, a smoother coat and a more vigorous behavior at the end of the eight-week period."

In the light of these favorable results, and in an effort to control scours during the winter period, all calves at the Dairy Research Farm were put on a similar ration containing aureomycin. Each calf received 60 grams of Aurofac daily, which is equivalent to 3 mg. of aureomycin per pound of body weight. This level of feeding was adjusted weekly and continued for four weeks, at which time it was cut in half, to 30 grams of Aurofac or 1.5 mg. of aureomycin per pound of body weight. This supplementation with aureomycin was begun at a time when considerable trouble was being experienced with scouring.

Dr. Pfau states: "Very favorable results have been obtained from the general feeding of Aurofac to the entire group of calves. The treatment was very effective in cleaning up all cases of scours. When the intake of aureomycin was cut 50%, there was no apparent difference in the original benefit obtained. There have only been a few cases of scours and these of only short duration since the feeding of the supplement began."

Many scientists have reported a growth-stimulating effect of aureomycin in young dairy calves. This has been substantiated by Dr. Pfau's work. Four Holstein calves were fed Aurofac for 60 days and their weights compared with all Holstein calves raised during the two years preceding the experiment. The table shows this comparison.

The animals in the Aurofac group showed an average daily

Effect of Aurofac Supplement In Terms of Weight Gain In Young Dairy Calves

Groups	No. of Calves	Avg. Age	Avg. Gain from Birth	Avg. Gain Day
		days	lbs.	lbs.
Expt.	4	60.5	91.00	1.50
Control	29	60.1	56.14	0.93
(Holstein calves raised from Jan. 1, 1950, to Jan. 1, 1952)				

gain 61.3% higher than those in the control group. While this comparison is exceptional, most experiments indicate a 20% to 30% increase in growth due to the feeding of aureomycin. Even though it seems that this increase in growth is in most part due to the excellent health of the animals, workers at other stations have reported similar benefits to calves without a history of scours.

Antibiotics are not nutrients and should not be used to re-

place them. They act more as a therapeutic drug.

Aureomycin is available in calf starters, commercial milk substitutes and in a concentrated form. At the Dairy Research Farm in Sussex, Aurofac, a concentrated mixture of aureomycin and vitamin B12, was added directly to the milk of the individual calf. This insured that the young calf received a sufficient amount during the first few weeks of age, which is the most critical time in raising calves. It was also a very simple and effective way of handling the product. Regardless of what form is used, the manufacturer's direction should be followed for the best results.

Modern Farming Requires about 400 per cent more cash outlay than was needed 40 years ago. Farm-grown horsepower has been traded for high-cash-cost mechanical power. Last year's farm cost records in 6 central Illinois counties showed an average cash outlay of $60.80 per crop acre. This covered such items as purchased (protein) feeds, 31%; gasoline, oil and machinery repairs replacement and depreciation, 30%; fertilizer, 8%; taxes, 7%; wages of labor, 7%; and building repairs, farm share of auto expense, etc 17%.

Ventilation Necessity for Layers

Don't be afraid to give the laying flock plenty of ventilation this coming winter, even on the coldest days, says M. L. Wilson, Purdue poultry specialist. Layers can stand the cold a lot better than people can, he reminds poultrymen.

Winter weather won't bother the laying flock so long as the birds are not exposed to drafts. Keep the front windows open until the water founts begin to freeze. Then partly close them. Eliminate drafts by keeping the back wall and ends closed tightly.

Also make sure that layers have plenty of water this winter, warns Wilson. Ordinarily, 100 hens will drink about 8 gallons of water a day in cold weather and they should have it at the right temperature.

Egg production will drop off sharply if the water is too cold or frozen. The smart poultryman overcomes this management problem by using a good automatic water warmer. It's also wise to protect exposed pipes with electrical heat tape.

Purdue Extension

DON'T LET PINFEATHERS ROB YOUR TURKEY PROFITS

They reduce grade, cut your price. Here's information to help solve the problem. . . .

Condensed from Turkey World.

W. J. Stadelman, F. Ziegler, J. W. Spencer

Turkey growers lose thousands of dollars each year as a result of grade reduction due to pinfeathers.

Many producers find their birds practically free of pinfeathers at about the time to sell. Yet, 10 days later these same birds may take a grade reduction due to heavy "pins."

Is it possible to predict when a turkey will have the last number of pinfeathers? This question is one that has been bothering turkey growers as long as they can remember. Perhaps the problem is of greater concern to the grower marketing fryer-roasters than one marketing mature birds. Nevertheless, it concerns everyone in the turkey business.

The possibility of getting an answer to this problem was suggested from observations made during the past several years in turkey finishing experiments conducted at the State College of Washington. In the course of these experiments, it was noted that there seemed to be a regular pattern associated with the number of pinfeathers these birds had at different times of the year. It looked as though there might be a period at about the fryer age when birds are relatively free of pinfeathers.

Since no studies had been made on large numbers of turkeys beginning at an early age, a project to study feathering of turkeys was proposed.

The objectives of the project were to determine the rate of feather development and changes in fleshing on turkeys from eight to 30 weeks of age. Since previous observations had been made on small numbers of birds, a minimum of 50 birds was set for each strain and each hatch. Three hatches of each strain were set at two-week intervals.

More than 900 poults were

Reprinted by permission from Turkey World, Mount Morris, Ill.

brooded and raised as near to commercial conditions as possible. They were moved from the brooder house to range pens when eight weeks of age. Extra birds were used in each group in order that a few could be dressed periodically to check the feathering scores against the actual carcass grade.

On the basis of freedom from pinfeathers, it was found that the birds which were scored 1 and 2 made Grade "A" carcasses, while birds scored 3 made Grade "B", and birds scored 4 and 5 graded out as "C."

The actual procedure for the study consisted of handling every bird each week from eight through 30 weeks of age, and giving it a score for finish as well as pinfeather development. In order to reduce variation in scoring for pinfeathers, all observations throughout the study were made by the same person. A pinfeather was considered to be any feather still enclosed within the quill—in other words, a feather not likely to be removed from the skin by a mechanical picker.

As a further check on the pinfeather score, an actual count was made of the number of pinfeathers in a measured area each time the birds were examined. A close relationship was found between this count and the score for pinfeathers.

Graphs comparing pinfeather scores with the age of the birds show that each of the three strains of Broad Breasted Bronze turkeys followed a similar pattern. Pinfeather scores were low from nine to 11 weeks, 16 to 18 weeks, and again from 26 to 30 weeks for the Bronze turkeys.

When the birds were dressed, grades were compared to these pinfeather scores. It was found that a high percentage of birds marketed at any of these three periods would have been classed as Grade "A" turkeys on the basis of pinfeathers.

The same pattern held true for the three different hatches. Males and females of each hatch followed similar patterns. There are ages, however, when there is wide variation between sexes. There appears to be greater sex variation with the third hatch than for the first two hatches.

The Beltsville Small Whites had low incidence of pinfeathers at 10, 15, and 18 weeks of age. On the basis of pinfeathers and fleshing, the Beltsville Small White turkeys of all hatches could have been marketed at any time after 22 weeks of age with a high percentage of top grade carcasses. Sex variation with Beltsville Small Whites was less than observed with Broad Breasted Bronze, but followed similar trends.

The very low scores for all strains at 10 weeks of age were

surprising. This might indicate a possible age at which to sell Bronze turkeys as fryers.

These findings refute the old story of having to wait two weeks or so after the first cold snap in order to have turkeys that are free enough of pinfeathers to make a Grade "A" carcass. The low points observed for Beltsville Small Whites correspond very closely to the currently used marketing ages for this variety.

It should be noted that the first hatch of turkeys was 18 weeks old on August 13, and 26 weeks old on October 8. The third hatch reached each of these ages one month later.

The variation between hatches as to ages when low incidence of pinfeathers occurred emphasizes that date of hatch of turkeys alone cannot be used for predicting marketability. However, if you are marketing mature birds, it is safe to assume that they will be practically free of pinfeathers any time after they are 26 weeks of age. The time lapse from the first period of low incidence of pinfeathers, 9 to 11 weeks, and the second low, 16 to 18 weeks, was seven weeks for each hatch and strain of Bronze turkeys.

The relative importance of freedom from pinfeathers has decreased with the acceptance of the sub-scald (140° F.) in processing. In this study all turkeys over 16 weeks old could have been processed almost free of "pins" by using the subscald. *Fat deposition appears to be a more serious obstacle to early marketing than pinfeathers.*

The finish on the Bronze birds with respect to fleshing was such that top quality was not reached on the hens until 22 weeks, and on the toms until 25 weeks. The fleshing can be influenced considerably by feeding. Therefore, this phase of the study needs further work.

The grower should remember that there is no time when birds are completely free from pinfeathers. As Professor Payne at Kansas State College says, "Growing turkeys are in a continuous molt, for pin or 'green' feathers are ever present on all sections of the body until the bird nears maturity."

How can the grower apply this information to his own situation? First of all, he should know that there is quite a little variation between individual birds. However, as a group, the birds follow the same pattern. This fact emphasizes the need for checking a sufficient number of birds to get the true picture. This number should be at least 25 to 30 birds. Another point to remember is that hens and toms

differ in ages when pinfeather scores are lowest, therefore both sexes must be checked.

How often a grower examines his birds, and at what ages, will depend on his marketing arrangements. If market dates must be set up well in advance, it would be advisable to determine the first low by examining a sample of birds at 9, 10, 11 and 12 weeks of age. Figuring seven weeks from this low age, a tentative date for marketing could be established. By checking pinfeathers again for one or two weeks prior to the proposed marketing date, exact schedules could be arranged to get the greatest advantage for any lot of birds.

The marketing of turkeys at ages of less than 20 weeks is, of course, dependent on getting sufficient fat covering on the birds. Recent advances in nutrition make this possibility quite probable.

It is realized that this research does not solve the problem of pinfeathers, but it should aid in its solution. Work is being continued at Washington State College, using one strain of Bronze turkeys and carrying their nutrition. It is planned to market some of these experimental birds this year before 20 weeks of age. This should help to determine if, by varied feeding methods, it is possible to get a high enough degree of finish to market top quality turkeys at the 16 to 18 weeks low point in pin-feather incidence.

New Strength for Old Tractor Tires

If you've got some worn but sound tractor tires on your farm, it may be wise to investigate the possibilities of having them relugged.

C. L. Hill, Purdue University engineer, says the process of relugging will give you a revitalized tire at less cost than a new one. He estimates a tire which costs $100 new, can be relugged for approximately $50. And this tire will give good service, if the job is done properly.

Relugging consists of rubber welding a new set of cold rubber lugs into those of the worn tire. Farmers who decide to give their old tractor tires new life won't be disappointed, believes Hill. The U.S.D.A. tillage laboratory gives the encouraging report that relugged tires lost rubber slower than either new or recapped tires. Besides, they find relugged tires are comparable to the others for drawbar pull.

Two Million New Farm Leaders

—and more coming. That's what we have from the FFA, the movement that makes expert farmers and better citizens.

Condensed from Farm Journal

Loren Donelson

IN MASON COUNTY, W. Va., the president of the County Civic Council—which coordinates all county activities—is Gus Douglass Jr.

Gus, who runs a 418-acre livestock farm, is also supervisor of his Soil Conservation District. He belongs to the Farm Bureau, has just completed two terms as president of his local Southern States Co-op, and heads up the Farmers' Truck & Implement Co., Inc., a farm machinery firm. He belongs to the Baptist Church, the Masonic Lodge, has served as Farmers Home Administration committeeman.

An essential man in the community? Sure is. Yet Gus is only 26 years old!

YOU CAN FIND GUS DOUGLASSES all over the U.S., in almost any one of the 9,000 communities with a Future Farmers of America chapter in its high school.

For FFA, just now observing its 25th anniversary, has made this very important contribution to our rural communities: *it has produced leaders!*

Not all of the nearly 2 million former FFA boys in the country are as active as Gus Douglass, of course.

But they do join farm organizations, support local schools and churches.

In the Kalispel, Mont., area for instance, the FFA chapter has supplied 13 known masters of local Granges, two Pomona masters, and one state master.

One former FFA boy has represented that area in the State Legislature. Ninety-three have been 4-H Club leaders and assistant leaders.

Former FFA members over the country are open-minded when it comes to farming methods—they're on the lookout for new ideas. *They're us-*

Reprinted by permission from Farm Journal, Philadelphia, Penna.

ually first in their neighborhoods to try new things.

BIRTHPLACE OF THIS MOVEMENT, which has given thousands of boys a start in farming, is Kansas City, Missouri. Future Farmers of America was founded there in 1928.

Vocational agriculture had been taught in high schools under the Smith-Hughes Act since 1917. The boys formed social "Ag Clubs," and these proved to be the spark that made FFA take hold and grow. The contributions that these local FFA chapters have made to their communities have been tremendous.

The Iowa Falls, Ia., chapter for instance, has two subsidiaries: the Crops and Soils Improvement Association, and the Iowa Falls Duroc Breeders Association.

On the crops side, the boys have fanning mills, which they rent out to clean small grain and soybean seed. They have a sprayer for orchard and barn spraying. Last spring they tested 314 samples of soybean, oats, and legume seeds.

They grow 40 acres or more of certified grain or soybean seed annually for use in the county. Each year they bring in 500 to 700 bushels of certified seed potatoes. Last year they did complete soil tests for more than 50 Hardin County farmers.

On the livestock side, the boys own a sales barn that was the site for 11 purebred sales last year. The boys themselves hold two sales each year, and since the chapter was started in 1930, they *have sold more than $215,000 worth of purebred hogs.* Not bad for a bunch of teen-age high-school kids.

In Live Oak, Fla., the FFA chapter has brought 35 purebred beef bulls to the community, helped seed more than 1,000 acres to improved permanent pastures, and helped place 50 or more purebred boars and higher-quality sows with farmers. ers.

The chapter planted 300,000 pine seedlings last year. And because FFA boys took the lead in supplemental feeding and tobacco and corn fertilization, these improved practices are now catching on all over Suwannee County.

But B. R. Mills, vocational agriculture instructor at Live Oak for eight years, can cite even more solid evidence of FFA achievements.

"Our chapter members are preferred customers at our two local banks. Boys still in school borrow from $100 to 1,000 on their crops and livestock.

AND TAKE A LOOK at what happened in Camp County,

Texas! When Joe Winkle started teaching vocational agriculture at Pittsburg in 1939, Camp County was practically one big cotton field. There were thirteen gins, one cotton compress, and an oil mill.

Today all thirteen gins, the compress, and the mill are gone! The county has swung to livestock. Practically every one of the thirty-nine Grade A dairies in the county trace back to an FFA heifer project that Winkle got started. Beef cattle are going strong, too. *The whole pattern of farm life in Camp County has changed.*

"The big thing is that we're learning how to grow better pastures and improve our livestock," explains Winkle. Camp County farmers will tell you that "Joe Winkle's boys are showing the way."

When James L. McMullen came to Jefferson, Ga., in 1937 as vocational agriculture teacher, you couldn't buy a beef steer in all of Jackson County.

McMullen imported a steer, and introduced his class to beef feeding. Today Jackson County is one of the purebred beef centers of the Southeast.

But the Jefferson chapter hasn't limited its activities to beef cattle.

When "Mac" started his FFA work, corn yields in Jackson County averaged about 11 bushels an acre; many farmers now use fertilizer and hybrid seed to hit 75- and 80-bushel averages.

Farm income in Jackson County is on the upswing, and a good many business folks give the credit to FFA.

FOLKS IN SOLANO COUNTY, CALIF., say that the FFA chapter at Dixon Union High School has done more to keep young people in the community than anything else. Glen Caldwell, vocational agriculture teacher, agrees.

"When we started the department here about ten years ago, you just didn't find any high-school graduates around who were less than 25 years old. As fast as they graduated they moved away."

It's different today in Solano County. For FFA not only helps teach boys to become expert farmers; it also makes them want to stay in their own communities after graduation. *Their hearts are in farming after they've finished with FFA.*

At the Rancocas Township High School, Mt. Holly, N.J., veteran teacher Clarence B. Davenport, like Caldwell, is proud of "keeping boys here in Mt. Holly."

His FFA alumni meet nearly every month to hear a speaker, or just visit. They hang to-

gether, help one another, trade ideas.

"We started the FFA here to help individual boys," explains Davenport, "but it wound up helping the whole community."

Davenport's boys have set up a branch office of the Production Credit Association right in their chapter. And from it they learn both how to borrow and how to lend money.

A committee of seniors listens to each applicant for a loan. They look over his plan. If it appears that he's over-optimistic, they pare down his application or turn it down.

"THOSE BOYS ARE HARD-BOILED," comments Davenport. "That Production Credit branch has never had a bad loan—and the boys don't want one now!" The association has helped many Mt. Holly boys "get a toe-hold" and become prosperous farmers.

In Sidney, Mont., Supt. R. A. Gerber says:: "The Vocational Agriculture Department here has kept more than 100 boys in school to complete their high-school educations."

You can find dozens of places where folks will tell you how FFA has helped straighten out boys who were headed for trouble.

Those are just some of the things that are going on in 9,000 communities over the country. *No wonder it's a happy 25th anniversary of FFA.*

Expects Beef Profits To Increase In 1954

Cattle feeders probably will realize greater profits this winter than they did last year—although 1954 cattle prices will about equal those of '53, says an agricultural extension economist.

"Most feeders are buying feeder stock at lower prices than a year ago," says R. B. Schwart of Ohio State University. "Fewer cattle will be fed and less fed-beef will be on the market this winter than last." An unexpected weakening in beef demand or an unexpected increase in cattle marketing—as a result of dry weather—could alter present price prospects, Schwart cautions.

Prices should be most favorable for fed cattle. Feeders appear to be putting fewer cattle on feed this fall than last. The supply of fed-cattle the first half of next year probably will be down. Although prices decline seasonally in the spring, they should average higher in 1954 than in 1953. Lower grades of cattle have suffered greater price reductions, Schwart says, because the supply has increased most.

THE QUARTER HORSE

How this breed is lunging ahead in numbers over all other breeds. . . .

Condensed from The Cattleman.

Lewis Nordyke

THE OTHER day at the La Mesa Park Race meet at Raton, New Mexico, two gabardined young men were discussing the fine qualities of their horses. One of them ignited some lusty chuckles in the stand when he said: "I can get on that Quarter Horse of mine and cut fly specks out of black pepper."

If you see some of the Quarter Horses cutting cattle in contests or on the range, you can well believe what the man said. Almost by pure instinct the Quarter Horse has cow savvy and can separate a calf from a herd in one of the smoothest and sweetest performances you ever saw.

For around three hundred years, men like the horseman at the Raton races have been bragging on their Quarter Horses and proving the speed, staying qualities and abilities of their animals in range work, pleasure riding, racing, cutting and in roping. Yet the Quarter Horse has been known officially as a distinct breed only a little more than a dozen years. As late as 1939 there were no registered Quarter Horses, and registrations with the American Quarter Horse Association in Amarillo, the only official registry, are running around 10,000 a year.

While other breeds canter along in popularity about as they have for a hundred years, the Quarter Horse is lunging ahead in his characteristic burst of speed. And not just as a range horse or a cowboy's best friend, but in racing and in shows. No other horse in America has attained this peak of popularity. And people wonder why. At the same time, a good many folks are a little confused about

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the meaning of the term "Quarter Horse."

As thousands of horse lovers know, the Quarter Horse can unwind like lightning. He has a tremendous burst of speed for the short distance of a quarter of a mile. He's the fastest thing on four legs for that distance and he takes his name from the traditional length of his race.

The Quarter Horse is a "using" animal. He's a pretty horse, but he's no peacock, high stepper or high-tail; the only thing about him is the way he can high-tail it for a quarter of a mile. He has been doing that for three centuries, starting on the forest paths of the early American colonies. The first horse-racing in this country was with "short" horses, the strongly muscled, lightning-like ancestors of today's Quarter Horse.

In the American Race-Turf Register and General Stud Book, compiled by Patrick Nisbett Edgar and published in 1831, we find a description of the great capabilities and winning qualities of one of the progenitors of the Quarter Horse breed, a dandy named Old Twigg. He was foaled in 1778 and belonged to John Goode of Virginia. Here's the way the old book tells of Old Twigg:

"A beautiful bright bay horse, heavily made, with a large blaze face, and two white hind feet, 14 hands one inch high, very compact, highly formed, and possessed with great muscular powers, symmetry, action and strength.

"He was a Quarter of a mile racehorse of the very first class. His speed was unknown to all his competitors, and whenever he was equally matched, he was universally successful. He won immense sums of money and hogsheads of tobacco. We have heard his breeder at different times assert that he was the strongest and the swiftest horse in the Universe, for three or four hundred yards, and that it was impossible for any horse in existence to beat him, unless he was made to carry heavy weights, or run a distance beyond one-quarter of a mile. He rarely ever was beaten, unless from some of the foregoing causes."

Today's Quarter Horse shows the same bend as Old Twigg. His blood still surges in the breed. It goes back to 1752, when a stallion named Imported Janus was imported to this country from England. He had more influence on the American Quarter Horse than perhaps any other sire. Old Twigg was of his blood. Other famed horses, whose names have been almost household words, also kept the Quarter blood strong. Some of them were Copperbottom, Steeldust, Rondo, Traveler, Peter McCue and Joe Bailey.

There were no registries, except for a few studs, in those

days. There was no association to keep an eagle eye on breeding and names and bloodlines. The Quarter Horse was kept pure and developed as a breed simply because he was the kind of horse that men loved and needed.

Starting with the early races along the trails and Indian paths of the Colonial woods, the Quarter Horse has always been on the outward Fringe of the frontier of America because he could be counted upon to do the things that men wanted accomplished. The explorers, the hunters, the mountainmen, the cowmen, the settlers needed a horse that could do things, and the "short," or Quarter Horse, could do things. So men bred horses to conform to these capabilities, and thus the Quarter Horse emerged as the most popular and useful breed of today. You see him in the rodeos for calf and steer roping and for bulldogging. At any rodeo, the pick-up men are usually mounted on Quarter Horses. You see him in the parades of the riding clubs and sheriffs' posses. You see him on the range. You see that great burst of speed on the race tracks.

Though the Quarter Horse is full of ginger, he's a friendly, gentle, dependable animal. He is excitable and doesn't work himself up into a frothy dither. The average, or typical Quarter Horse would be about 14 hands three and a half inches high and weigh around 1,175. He would have bulging muscles. He would be sturdy and trim, with a good head topped by foxy ears. He would be sorrel, bay, chestnut, dun, brown, gray palomino. He would be all horse.

The Quarter Horse, as has often been said, is the poor man's good horse. Generally, he is owner bred, raised, and trained. He doesn't require curling irons or the meticulous, expensive care of the beauty curves, high-stepping peacocks. Put him out on the range and he can rustle his own living.

He is not an expensive animal to buy, breed or keep. Some of the outstanding stallions have sold for as much as $30,000. A good cutting horse, say a gelding, will bring around $1,500. Top ones bring from $3,500 to $7,500, and the prices vary up and down.

The thing from which the Quarter Horse got his name—that tremendous burst of speed—is one cause of the animal's growing popularity. The "short" horses have been r u n n i n g against each other in this country since back in 1653 in Colonial Virginia. Through the years few other things have been as exciting as quarter-mile racing on a straightaway between two matched horses, plunging off from a standing start.

Through the years Quarter

Horse racing has been popular, but for a long time it was an abused sport. It was not established, at least in the public mind, like the racing of the blue-bloods in such events as the Kentucky Derby. But in the past dozen or so years, with the advent of the American Quarter Horse Racing Association, Quarter Horse racing has come into its own. Today it is a strong competitor of Thoroughbred racing.

Recent Research in Cattle Feeding at Purdue University is changing the viewpoint on the place of antibiotics in the beef cattle ration. Cattle on a high roughage ration containing aureomycin grew faster, made heavier weights and required less feed per pound of gain than those animals on the same diet without an antibiotic. However, it is a different story with steers on a high energy ration of corn. Antibiotics appear to stimulate growth in cattle during the first two or three months of feeding. The Purdue researchers fed a level of 75 milligrams of aureomycin daily per steer at an additional cost of only one cent.

Why Heifers Fail to Breed

Four out of every ten heifers will not deliver a calf the first time they are bred. That's not news. Scientists have known it for a long time.

But it would be news if scientists could find the reasons for all these failures in breeding and could prevent them. There's nothing more discouraging to a dairy farmer than carrying a doubtful heifer along.

University of Wisconsin breeding specialists working on this problem, now have some of the answers to causes of breeding failures with heifers. The largest causes seems to be death of the embryo. This accounts for failure of 16 in every hundred inseminations. Following closely are fertilization failures—12 per cent. These are not due to sterile bulls, but result from fertile bulls that are not of the very highest fertility.

Nine per cent of the breedings fail because of defective eggs, the group finds and three per cent because of defects in the cow's reproductive tracts. The remaining 60 per cent of the inseminations produce a calf.

University of Wisconsin

FARMER ROBERTS NEVER STOPS LEARNING

He gets all available information and "heeds" it . . .

Condensed from The Ohio Farmer

Delmer E. Groves

THIS younger generation of farmers will do all right! I say this after talking with Dan Roberts of Butler County, Ohio and looking over his stock and land. He gets all the best information that can be had and then studies things out for himself. He would be the first to admit that his system is not 100 per cent perfect, probably never will be. But it will continue to improve because he's willing to learn.

He goes to meetings. He may hear or see nothing new, and then again maybe he will.

At one such meeting he heard E. P. Reed, state extension agronomist, tell about W64, a hybrid corn that would do well in his area when planted close in the row.

Although a shorter-season hybrid than he'd been using, he planted it only 7½ inches apart in the row, plowed down 70 pounds of actual nitrogen and got good yields. All the corn gets 350 pounds per acre of 3-12-12 fertilizer in the row at planting time. "With the season favorable, I'd be disappointed if it didn't make 100 bushels per acre," he says.

Since W64 matures early, the crop can be harvested in time for wheat seeding. By planting closer together in the row, he gets as good a corn yield as could be expected from a late-maturing variety spaced wider.

After growing a good corn crop, Don doesn't waste it. He has built two 2500-bushel narrow cribs—these are only 3½ feet wide although they bulge to four feet in width under a heavy load of corn. The cribs are located out in the open where they receive good ventilation. Thus, corn can be picked

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while high in moisture and still keep safely. Each crib is 75 feet long and 12 feet high. They are made of home-grown posts with woven-wire fencing and protected with wide tin roof. The floors are of concrete. The hog-farrowing pens are placed up against one of these cribs for winter farrowing. This provides protection from the wind and at the same time, it makes corn feeding handy. There's a concrete apron between the crib and the farrowing houses which is penned in.

The other buildings have been remodeled. Aluminum siding was placed over the old rough-sided barn and outbuildings. Roberts likes to keep all of his machinery under cover. The old corncrib in the machinery storage building has been tightly sided and now serves as a small grain storage. He plans to fumigate his wheat before the weevils get a start in it.

A farm pond covering two-tenths of an acre was built near the barns and house to provide water for livestock and also for fire protection. Three frost-proof hydrants provide the necessary outlets for water. The water is supplied under pressure from a jet pump.

The livestock program on this diversified farm matches the good management shown in the planning and use of equipment.

Meat-type hogs are grown for which Roberts collects the 50 - cent premium on the Cincinnati Producers market. Of course, not all of the hogs qualify for the premium. However, they are bred in such a way that a good percentage of them pass meat-type standards.

Roberts has followed three-breed rotational crossing for the past four years. He started with 10 Hampshire brood gilts. These were bred to a Tamworth boar. Pigs from the best-producing sows were ear-marked. His plan is to produce four litters from each sow and then save gilts for the next crop.

The second boar used was a Yorkshire. Now Roberts plans to go through the cycle again, each time saving the best gilts. He is not quite sure about keeping the Yorkshires in the program.

Roberts likes this system of rotational cross-breeding because it gives him large litters of vigorous pigs. They reach market rate in a minimum of time and feed out with a high percentage of meat-type hogs. Recently he sold 16 pigs which averaged 207 pounds at only ten days over five months of age. They all graded meat-type.

He is a careful feeder and plans his own rations, following the recommendations of the university and experiment station.

Pigs are creep-fed and weaned at eight to 10 weeks of age. Male pigs are castrated at two weeks of age.

The spring litters are farrowed during the latter part of January and February in 10 individual houses. He uses electric brooders with 150-watt bulbs. If the temperature gets as low as 10° above zero, a heat bulb is placed over the sow. The pigs can run in pens on the concrete slab in front of the farrowing house. At four to six weeks they are moved to pasture. Sod is put into the pens regularly during this period.

Roberts mixes his own protein supplement which includes antibiotics plus vitamin B-12. He uses very little animal protein, not over 200 pounds in a 1200-pound mix. This because the price is usually higher than for plant proteins.

The fall litters are farrowed in the barn during the latter part of July, where corn and supplement are hand-fed to the sows. These pigs can run to pasture soon after farrowing. Feeding is handled pretty much the same as the winter-farrowed pigs, but of course, some feed is saved by having the sows and pigs on good grass-legume pasture.

A four-year rotation is followed on the 167-acre farm. Terracing and other soil conservation measures are in effect.

Roberts chooses to grow his own beef feeders. This is another spot where he cuts down on the gamble of farming. Some years it has not paid. However, it prevented him from losing his shirt on one crop of feeders bought at the wrong time. Since he has two years of meadow crops, there is plenty of forage for the brood cows.

He has 17 head of Herefords and may increase his herd to 20. He tries to keep a good beef bull and expects to pay a decent price to secure the proper kind of bull. Under this system, he ends up with around 20 head of feeders each year.

He is now building an addition to his barn to handle beef-feeding operations. It is being built along the lines of a Doane building, but he has adapted the plan to suit his own needs. This addition will be 39 to 50 feet, with a roof 20 feet high at the barn, falling off to eight feet at the eave.

Two rows of creosoted poles which will serve as roof supports were bought installed and creosoted. Concrete block is being used as the outside wall of this building. He expects to have room in this addition for both hay and straw for his home-produced feeder cattle.

The old farm home has been partially remodeled. Complete

modernization must wait for the investment in the various farm enterprises to pay a profit. Dan Roberts is now in a position to collect that premium as a result of his vision and foresight, plus his willingness to heed the best advice available.

1953 Pig Rations $9.00 Better Than 1930

Pigs fed modern 1953 rations can far outdistance their brothers and sisters fed rations typical of 1910 and 1930. Proof has come in form of a demonstration conducted by the University of Minnesota.

The pigs, five sets of litter mates, started even at weaning time, averaging 51 pounds each. Three months later the 1953-fed pigs average 240 pounds, the 1910-fed animals 118 pounds, and the 1930-fed hogs, 161 pounds.

This means that the hog producer can raise a 225-pound hog for $9 less using 1953 rations than using 1910 rations. Not only did the modern-fed pigs gain faster but they took less feed to gain weight. Up to 125 pounds, the 1910-fed animals averaged 523 pounds of feed to put on 100 pounds weight; the 1930 animals, 364 pounds; and the 1953 hogs, 297 pounds.

Here's the ration Hanson fed the different lots:

1910 ration—97 per cent corn and 3 per cent complex mineral. *1930 ration*—Practically the same ration plus tankage. It included 88 per cent corn, 11.5 per cent tankage and .5 per cent trace mineralized salt until the pigs weighed 125 pounds. This made a 14 per cent protein ration. After 125 pounds protein content was cut to 11 per cent with a ration of 93.5 per cent corn, 5 per cent tankage, .5 per cent trace mineralized salt, and 1 per cent complex mineral.

1953 ration—This ration featured the University-developed "Minnesota Supplement". Before the pigs reached 125 pounds the ration was a 14 per cent protein ration and included a little over 80 per cent corn and 20 per cent "Minnesota Supplement".

After the pigs were 125 pounds protein was reduced to 11 per cent, and the ration included 88.5 per cent corn and 11.5 per cent "Minnesota Supplement" containing 41 per cent soybean oil meal, 20 per cent tankage, 10 per cent linseed oil meal, 25 per cent alfalfa meal, 2 per cent bone meal, 2 per cent trace element salt, and traces of B-12 and antibiotics.

University Farm News

THE TRUTH ABOUT

DUAL-PURPOSE CATTLE

They have many advantages writes Claude H. Hinman, famous judge and author of a new book on the subject. . .

Condensed from the book, DUAL-PURPOSE CATTLE

Claude H. Hinman

DUAL-PURPOSE CATTLE
Part One

THERE was a time when many persons in charge of Animal Husbandry education argued that there is no such thing as dual-purpose cattle and, even if there is, there ought not to be. "If, however, farmers will persist in favoring dual-purpose cattle they ought to turn them into dairy cattle or beef cattle as rapidly as possible. We will tell them how to do it."

The fact is that all cattle are in some sense dual-purpose. Beef is the end-product of dual-purpose and even of dairy cattle, and all beef cattle need to produce some milk. Indeed, the problem now with the so-called "modern type" of beef cattle is to get enough milk to give the calves a good start. What dual-purpose cattle are, then, becomes a question of aims and handling. The dual-purpose ideal is an animal that will produce, under farm conditions, all the milk possible consistent with acceptable meat form. This seems to work out to about 8,000 to 12,000 pounds of milk, or 300 to 450 pounds of butterfat, as a yearly average. There are, of course, large individual differences. Weight usually approximates an average of 1,200 to 1,500 pounds for mature cows, when dry, and 1,900 to 2,400 pounds for mature bulls in ordinary good flesh.

Dual-Purpose Breeds. The most numerous cattle which

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measure up to the dual-purpose ideal are those of the Milking Short-horn and of the Red Poll breeds.

Milking Shorthorns. These average larger in size than any other dual-purpose breed. More Milking Shorthorns, purebred and grade, are used in milk production in the United States than are any other dual-purpose breed. The **Milking Shorthorn Journal** reported that 146 breeders in 27 states had on test for June, 1952, a total of 422 cows of all ages, that exceeding forty pounds of butterfat for that month; the highest record being 91.53 pounds of fat from 1,695 pounds of milk. All records were on twice a day milking.

Among other advantages claimed by the breeders of Milking Shorthorns are: better udders, quieter cattle and better dispositions. More weight for age in the case of growing young stock and greater salvage value when through milking are characteristic features of the breed.

Red Polls. Among dual-purpose cattle the Red Polls are characterized by: uniformity of color and in form to a greater degree than most other breeds; early maturity, in which they seem to excell; attractive polled heads; a rounded body, more nearly approaching the Angus, giving a better indication of finish when fattened; high carcass quality, in which they have stood up well with the beef breeds in show competition; satisfactory results in cross-breeding, especially with Brahman cattle for southern beef production; satisfactory milk production in those herds in which attention is given to this feature. The **Red Poll News** reported that 21 breeders from 10 states had on test for June, 1952, a total of 30 cows that exceeded 40 pounds of butterfat, the highest being 76.4 pounds of butterfat from 1,820 pounds of milk. Fifty-four other Red Poll cows exceeded thirty pounds of fat for the same month. All of these reports were on twice a day milking.

Why Are They?

Although most of the agricultural leaders in the United States, have until very recently recently condemned the dual-purpose ideal, and have propagandized for special purpose breeds and special handling, the fact remains that there are, in the United States, more dual-purpose cattle on general farms, except in urban milk-sheds, than any other kind. In England, the home of most improved breeds of livestock, both beef and dairy, most of the milk and most of the beef is produced by what they call Dairy Shorthorns, a dual-purpose breed, the same as our

Milking Shorthorns. The Red Polls also are important in England. These farmers in England, Canada and the United States are neither ignorant nor are they possessed of more than usual inertia. It would seem fair to examine at least some of the reasons for their stubbornness and failure to accept the light so long and alluringly held before them. Why do they persist in ignoring the "experts!"

Someone has said that "An expert is a person who avoids or ignores the small errors as he sweeps on to the grand fallacy." The grand fallacy lies in lack of due consideration of the factors in the argument between the dairy experts and the breeders of dual-purpose cattle. The whole case, according to the experts, rests upon the fact that the high-producing dairy cow pays more return for each dollar's worth of feed consumed than does the lower producer or the dual-purpose cow.

Their tables show, what no one denies, that value of produce over cost of feed increases with increased production **up to a certain point.** Unless the price of the product increases as rapidly as do feed prices, and it rarely does during rising prices, the difference in return drops. The 700-800-pound cows pay but little more than the 300-400-pound group.

The experts may qualify and provide an avenue of escape by saying, "Other things being equal, there is no economic justification for milking anything other than high-producing dairy cows or in breeding any other kind for milk production." The over-looked or ignored errors contained in this fallacy lie in the fact that **other things are not equal**—far from it.

Dairying is admittedly a most important agricultural industry, perhaps the most important. However, it must not be overlooked that it is a special type of agricultural industry with its own problems and that there are many and important costs and conditions which may well more than compensate for the added returns shown per dollar for feed by the high-producing dairy cows upon which the expert bases his case.

Some of these costs and conditions are to be found in the following: labor, feed, health, value of increase, replacement and salvage, equipment and housing, markets, personal aptitude of owner.

Labor. Dairy labor must be continuous and reliable. Such work is confining. Many studies have been made of the man-hours required in dairying. They have varied widely, but the average rarely falls below 125 hours per year per cow and

more often exceeds this. This means that one man can handle but 30 to 40 cows, and if he does this he will be working more hours than many men like to work. He can do little farming aside from the strictly dairy work.

In dual-purpose farming comparatively few cows are kept, handling is keyed in with other farming operations. Cattle are kept primarily to utilize pasture, farm-raised grain and roughage. In periods of labor shortage or extra demand upon the available supply it is not unusual to use some of the cows to raise calves and to milk the remainder. In other words, these cattle are incidental to the general farm operation and are not the only source of farm income.

Feeding. Feed cost is the major item in the expense of handling high-producing dairy cows. It is because of this that the "experts" give so much attention to the higher returns per dollar's worth of feed from the big producers as compared to those that do not produce so much. But the statistics do not tell the whole story. These high-producing dairy cows require more nutrients than they can get from pasture, roughage, and silage. This means—always—that for this high production they must be furnished with purchased commercial concentrates.

In comparing the returns for feed costs of high-producing dairy cows with dual-purpose cows, of course, the market value of the feeds used must be taken into consideration. There is, however, an important difference. Market value of purchased feed is higher than farm value of the farm-raised feeds contained in them. When the dual-purpose cow has paid for her farm-produced feed she has paid her owner for raising it and has relieved him from the cost of delivery and handling for which the purchaser of high-priced commercial feeds must pay in cash. In the case of pasture she has done the harvesting. There are other perhaps less important, but nonetheless real, differences in feed costs. Feed, and nothing else, produces milk, or meat, or growth. On relatively low-power rations breed becomes unimportant. When cows are fed rations not greatly higher than the requirement for maintenance they all produce about the same, irrespective of breed or potential producing power. Food for maintenance is less with dual-purpose cattle than with high-producing dairy cattle, of the same size, because dual-purpose cattle are characteristically thicker fleshed and do not require so much of the food to maintain body heat.

Health. The incidence of

disease increases with closer housing and higher feeding. The chief diseases of cattle now are mastitis, brucellosis, sterility, and those arising from calcium deficiency, such as milk fever and defiency abortion. Mastitis and brucellosis are, of course, infectious diseases caused by bacteria, and as such are not caused directly by housing or by heavy feeding, but these bacteria are of very general occurrence and any condition that lowers the resistance of the animal tends to make it more susceptible to all form of bacterial disease. Mastitis is directly concerned with milk production, and it is common knowledge that the higher the production, the greater the susceptibility. Calcium deficiency is directly caused by high production with insufficient calcium intake to compensate for that given off in a large production of milk.

Sterility may come from a great many causes, but lactation and reproduction are directly connected and the requirements of a heavy milk production are not infrequently accompanied by troubles in reproduction.

Increase. Extensive and repeated investigations have disclosed that about 52 per cent of all calves are bulls. Dairy breed bulls in commercial herds do not pay cost of raising as steers. They do not on the average pay cost of raising and keeping until sold for breeders in purebred dairy herds. So most of them are sold when a day or two old. Calves of the dairy breeds sell on the average, in local auctions, for approximately one-half the price of dual-purpose bull calves of the same age. Calves of the smaller dairy breeds average considerably less than one-fourth the price of dual-purpose calves. This may seem a small matter, but within the last few years these baby calves from commercial dual-purpose cows have sold as high as $60 when less than three days old. This pays interest on a very good price for the dam.

Replacement and Salvage. Studies have been made of the average productive life of dairy cows under different conditions. These show some variations, both as to location and breed, but the average is four years or a little less. This means that 25 per cent of the high-producing dairy herd must be replaced every year. In England, native land of the dual-purpose breeds, the government keeps detailed statistics of all cattle that are milked. During a recent year, figures were released showing that the average "producing life" of the Red Poll in English herds was six lactations compared with three for the dairy breeds. An average of several

years puts the ratio as about five to three. Longevity has always been an important characteristic of the Dairy or Milking Shorthorn.

Dairy cows, especially the heavier producers, do not compare at all favorably in market price with dual-purpose cows when their productive period is over. The former have to go as shelly canners or, at best, as cutters, whereas the dual-purpose cows will generally go as commercial beef. This means that the salvage from the latter will be 35 per cent to 75 per cent greater than that of the dairy canner and will frequently amount to the full price of the replacement cow. It rarely pays to fatten a dairy canner.

In herds of all breeds there will be some non-breeding heifers, some low-producing heifers, and some others that for one reason or another are not suitable for replacements in the herd. When these are in dual-purpose herds they sell materially higher than do such heifers from dairy herds, and the same is true of the steers. These feed out as well and sell about as high as do the strictly beef steers.

Dual-purpose bulls also command higher prices than do bulls of even the larger dairy breeds and, of course, they outweigh and outsell per pound those of the smaller dairy breeds. A registered dual-purpose bull sold in California in 1953 for beef at eight years old for $835 and large numbers sold for upwards of $600 in markets all over the country. Such amounts will buy a replacement and will leave quite a margin to apply on the feed bill.

The productive life of dual-purpose cattle has not been studied as completely as that of dairy cattle. It is, however, known to be much longer. This would be expected because such cattle are kept much longer. This would be expected because such cattle are kept under more natural conditions, are not worked so hard, and are not likely to be subject to such diseases as come with heavy feeding and high milk production. It is quite commonly reckoned that it takes, on the average, the profits of the first two lactations of a dairy cow to pay for her raising. Her average productive life is less than four years. It is readily seen that it becomes a matter of great importance if a cow can have a producing life of six or eight years instead of four.

This writer is aware of the incidence of high-producing cows living to great ages and calving for many years. These are to be found in all breeds but they are more common in dual-purpose cattle than in

high-producing dairy cattle. A study of the average ages at which test records have been made in various breeds makes it safe to say that the average productive life of dual-purpose breeds is certainly 50 per cent greater than that of the dairy breeds—and it is probably much more nearly 100 per cent.

Equipment and Housing. Because the high-producing dairy cow must use the food which she assimilates for this production, it is necessary that she be housed to keep her warm and protected from storms. Dairy cattle require much more expensive barns, milkhouses and milk-handling equipment than do dual-purpose cattle. Preparation for the sale of market milk also requires expensive equipment and added labor. The overhead for such housing and equipment constitutes a real expense in the operation of dairying.

Market Problems. Special-purpose dairy cows so handled as to secure high production require a Grade A market setup to justify the expense in their operation, and this becomes increasingly true as costs rise. The rise in margarine consumption is rapidly taking the butterfat market.

The success of margarine as a butter substitute is leading manufacturers to invade other markets with substitutes. In so far as this may come about it will tend to restrict the profitable use of special-purpose dairy cattle to those areas in which the market for fluid milk is practicable and profitable. Do not think this is an attempt to "frighten with false fire." It is definitely the greatest danger facing the dairy industry today. The prospective profits are great, and the fence is already down.

Summary

These, then, are the facts—dual-purpose cattle, handled as such, compared with high-producing, special-purpose dairy cattle, do have certain advantages. These are:

They require less and relatively unskilled labor.

They require less purchased high - priced concentrates — (grain.)

They are less susceptible to disease.

Fewer veterinary bills.

Expendable increase sells higher and more easily.

Replacements are less.

Salvage is much greater.

Equipment and housing costs less, both in initial cost and maintenance.

A specialized market is not so necessary.

The handling as a farm en-

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Facts and Figures on Feeding

MOLASSES TO DAIRY CATTLE

Judging by the number of inquiries directed to agricultural colleges, a great many dairymen are now interested in feed molasses.

Here's the story on molasses feeding from Michigan extension Dairyman J. G. Hays.

Molasses is heavy, weighing about 12 pounds to the gallon. It's a carbohydrate, more similar to corn than any other cow feed in feeding value. Six and a half gallons of molasses is equal to one bushel of ground shelled corn.

That would mean that a ton of molasses—or 171 gallons—is equal to about 1,500 pounds of ground shelled corn. Beet molasses is quoted at about $40 a ton in ton lots. And corn is quoted at about $55 a ton.

Hays suggests that molasses is somewhat of a nuisance to feed. It's added to grain when grinding or mixing—that's the easiest way to feed it. Molasses should not be over 20 per cent of the total mix. Or it can be poured on grain in the manger—a cupful twice a day is equal to about two pounds of corn.

Molasses also can be spread on roughage to induce cows to eat low quality hay. This may not be a good idea, Hays noted, but if good roughage is not available, molasses may be a big help. Many cattlemen believe molasses to be good for a cow's health. It makes the animal's coat shine.

Dried molasses is easier to feed than the wet kind, Hays says, but has no more feeding value, pound for pound, than liquid. As for self-feeding molasses, the dairyman believes, it's of doubtful value for dairy cattle when the amount they eat must be controlled. If it is self-fed, the cows should be exposed to it gradually. And the amount placed before the cows at one time should be no more than that recommended.

Michigan State College